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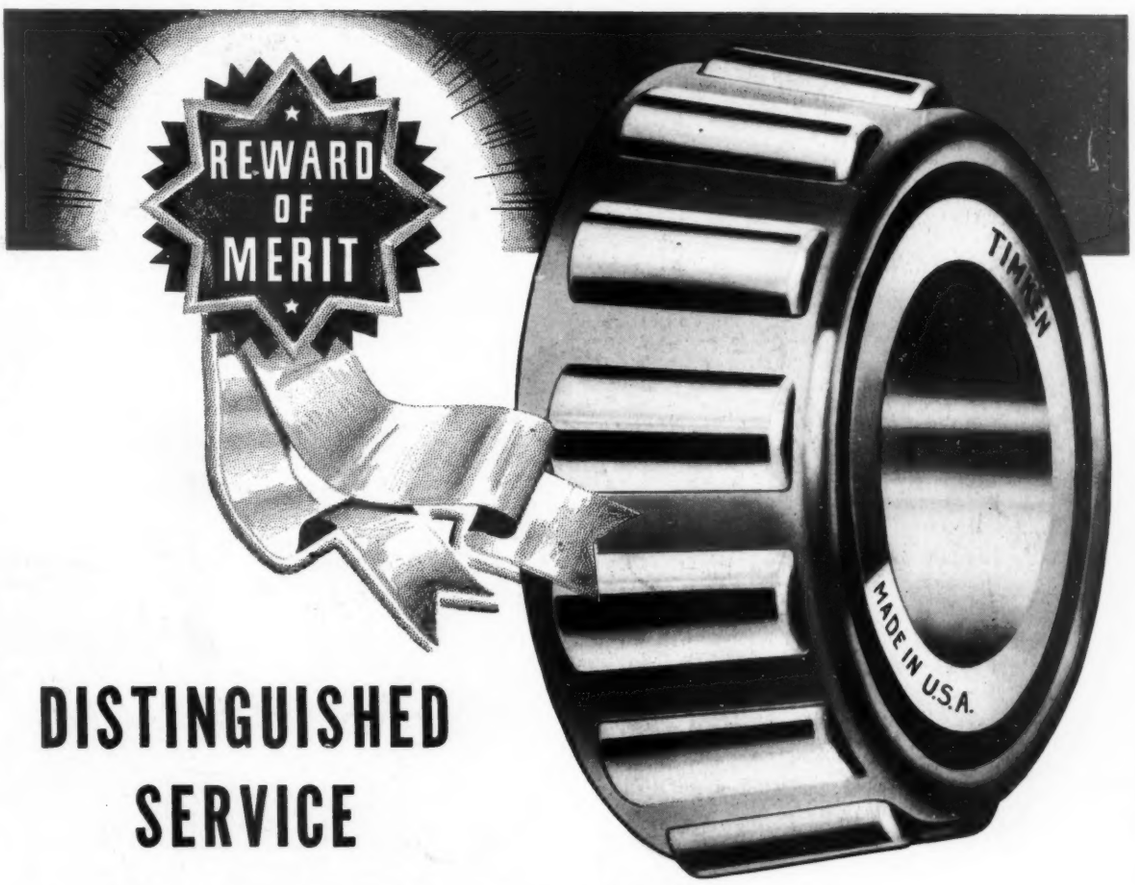

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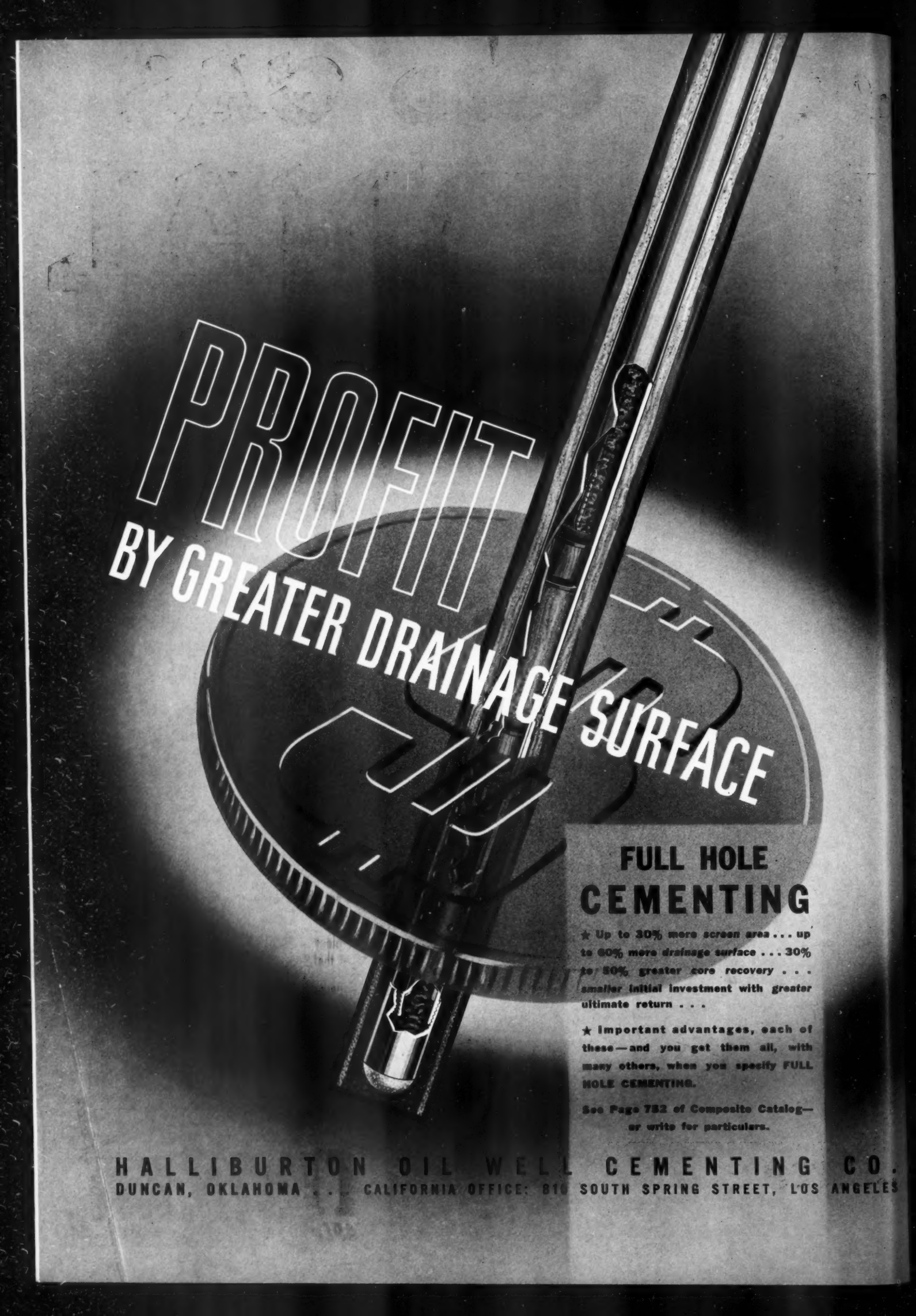

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The OIL AND GAS JOURNAL

PUBLISHED WEEKLY BY THE PETROLEUM PUBLISHING COMPANY AT TULSA, OKLAHOMA

VOL. 36, NO. 14 AUGUST 19, 1937

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Rates: Domestic, 1 year, $6.00; 6 months, $3.00. Canadian and foreign, 1 year, $7.00; 6 months, $3.50. All subscriptions are payable in advance. Extra copies of special issues are reserved for subscribers' needs and may be purchased by subscribers at the price of 50 cents per copy.

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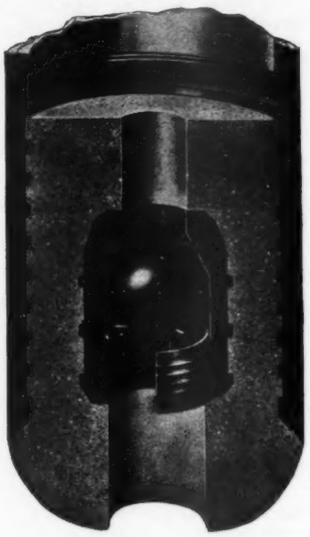
See for Yourself

WHY AND HOW THE UNQUESTIONED SUPERIORITY OF DESIGN AND OPERATION OF THE BALL-TYPE VALVE USED EXCLUSIVELY IN BAKER CEMENT EQUIPMENT AFFORDS THE *ULTIMATE IN VALVE EFFICIENCY*...

HERE IS THE VALVE ASSEMBLY COMPLETE

Sectional view of Baker Cement Float Shoe showing the complete Bakelite Valve Assembly firmly anchored in Baker-Formula Concrete. Note how the Assembly is set on end to present a minimum cross section to the drilling bit.



ONLY BAKELITE IS USED IN CONSTRUCTION OF VALVE ASSEMBLY

The Valve Seat, Cage and Ball of the Baker Valve Assembly are constructed entirely of Bakelite—a resin-like substance produced when carbolic acid is treated with formaldehyde and combined with powdered cellulose flour derived from wood or similar substance. This material is moulded under heat and pressure and then cured to the required hardness and friability. This friability provides the feature of being easily drilled up into small particles. Laboratory tests on the Bakelite Valve Seat, Cage and Ball have shown a strength far in excess of any pressure that might be encountered in the hole.

AMPLE CIRCULATION AREAS

As clearly shown in the accompanying illustration, Baker Bakelite Valve Assemblies are made with ample circulation areas to insure adequate and unrestricted passage of the cement. These areas, however, have been carefully designed to give the very desirable "wash-down" action that is so essential in many fields.

IMMEDIATE AND POSITIVE VALVE CLOSURE

The double-sealing action of the Baker Valve Assembly eliminates all possibility of leaking while floating in a string of casing and provides an immediate and positive valve closure following the cementing operation. Note how the ball fits tightly on its upper seat (a rubber ring backed by Bakelite) while the casing is being floated in. During cementing operations, it rests on projecting fingers around which the cement passes in an unrestricted flow through the passageways in the Bakelite Valve Seat.

BAKER BAKELITE VALVES OPERATE IMMEDIATELY AND POSITIVELY. THEY FURNISH A LEAK-PROOF SEAL AGAINST EITHER LOW OR HIGH PRESSURE WHEN FLOATING-IN AND STOP ANY CEMENT FROM BACKING UP INTO CASING WHEN PUMP PRESSURE IS RELIEVED.

. . . and in addition to valve efficiency, Baker gives you *STRENGTH and DRILLABILITY*

STRENGTH

It is stronger than the collapsing strength of the casing upon which it is run—safe for strings of any length.

DRILLABILITY

The plug and valve assembly being made of Bakelite and Baker-Formula Concrete permits both materials to be quickly and easily drilled out, drilled up and circulated out of the hole with the rotary mud. No dangerous metal is left to prevent coring directly below the shoe, or to deflect the bit and start an off-vertical hole.

It is BAKER Valve Efficiency combined with STRENGTH and DRILLABILITY that provide the perfectly balanced equipment for guiding, floating and cementing strings of casing.

Look on Pages 189 to 206 of the BAKER CATALOG or the 1937 COMPOSITE CATALOG for more complete details.

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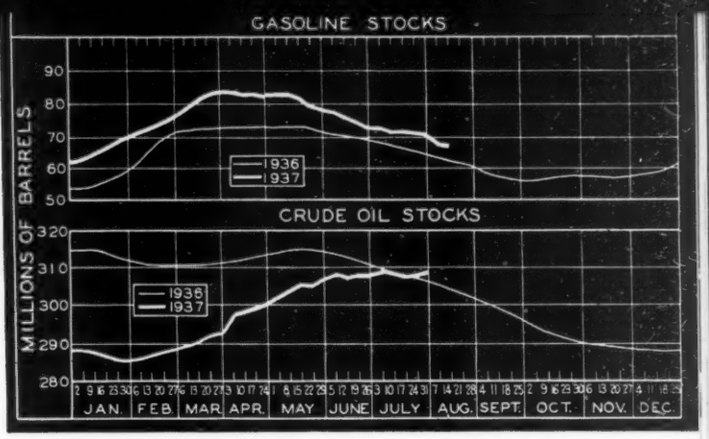


Plan to Cut September Output

DEVELOPMENTS the first of the week revealed widening support in the plans to reduce crude oil production in September. Certain crude purchasers and producers announced that they would reduce their nominations at the forthcoming state hearings, and officials connected with proration bodies of three states have said they look with favor on these plans and will cooperate through the reduction of state allowables next month.

CRUDE PRODUCTION *3,710,491 barrels daily average—up 41,882 barrels.*

CRUDE STOCKS *308,250,000 barrels as of July 31—up 699,000 barrels.*

GASOLINE STOCKS *69,087,000 barrels as of August 14—down 129,000 barrels.*

REFINERY RUNS *3,340,000 barrels daily average past week—unchanged.*

An increase of 41,882 barrels in national output last week to a new peak, has served to bring additional support for the curtailment program. It is conceded this is too much production for August, the month of largest requirements. It is also apparent that this disparity between supply and demand will increase next month due to a seasonal decline for gasoline.

It was indicated on Monday that the Bureau of Mines recommendation for September will be about the same as this month. It is known that its recommendations for Oklahoma and Kansas will be within a few hundred barrels daily of the August figures.

The job of the industry and the state commissions will be to bring actual production within or closer to the bureau's estimated demands for next month. Last week every producing area contributed to the total of 248,491 barrels daily which represented the difference between actual production and estimated demand. Eighty per cent of this total, however, is accounted for by the excess production of Texas and California.

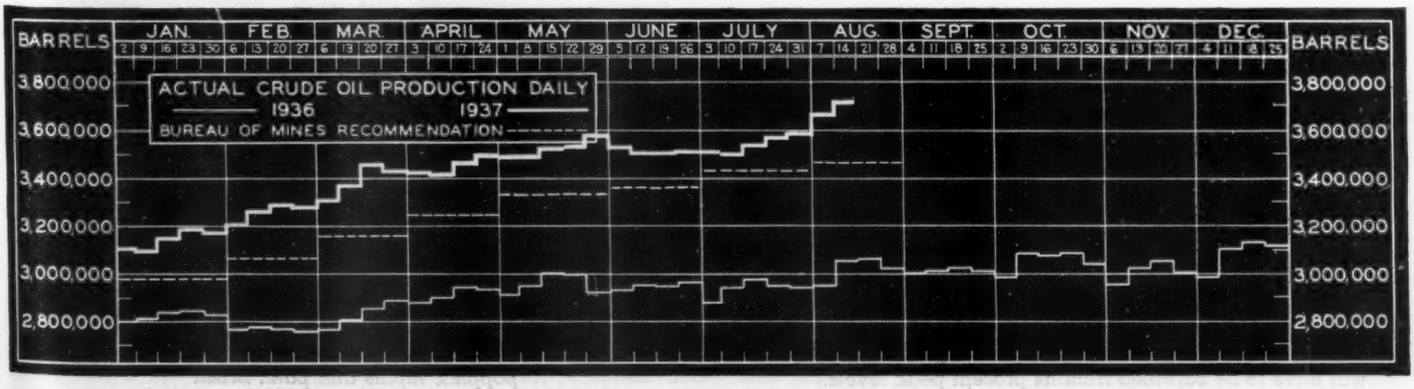
In Oklahoma W. J. Armstrong, chief conservation officer, announced after a survey that Oklahoma production should be reduced up to 50,000 barrels daily next month. One large producing company in the state which has been running 20,000 to 30,000 barrels daily to storage is quoted as willing to reduce its output that amount provided similar reductions are made by others operating in the same areas. This matter of willingness of individual producers and the larger oil states to contribute their proportionate share will determine the outcome of the curtailment effort.

Wells opening new pools were reported in St. Marys Parish, Louisiana, Greenwood County, Kansas, and Caldwell and Guadalupe counties of Southwest Texas. Completions in Miller County assure that important production will materialize on the Arkansas side of the Rodessa field. In Grant County, Oklahoma, a wildcat test gave indications of showing commercial production. Both crude and refinery markets are generally steady. Several refining centers report numerous inquiries for kerosene and light distillates.

Daily Average Production for Week

	Aug. 14, 1937	Bur. Mines Aug. est.	Aug. state allowable	Aug. 7, 1937
Oklahoma City	157,200	.....	.....	173,275
Fitts	98,725	.....	.....	86,550
Remainder of state	393,000	.....	.....	394,300
Total Oklahoma	648,925	633,400	633,400	654,125
East Texas	475,397	.....	.....	478,623
West Texas	240,698	.....	.....	224,319
North Central Texas	108,750	.....	.....	108,196
Texas Panhandle	83,147	.....	.....	76,995
East Central Texas	127,650	.....	.....	125,620
Gulf Coast—Texas	374,950	.....	.....	362,635
Southwest Texas	123,647	.....	.....	121,179
Total Texas	1,534,239	1,395,200	1,500,317	1,497,567
North Louisiana	86,535	.....	.....	88,515
Gulf Coast—Louisiana	175,150	.....	.....	173,715
Total Louisiana	261,685	253,900	264,550	262,230
California	672,300	612,800	612,800	673,250
Kansas	206,050	200,500	200,500	195,050
Arkansas	31,530	29,100	.....	31,900
Eastern Fields	122,500	121,900	.....	122,700
Michigan	44,782	39,900	.....	44,017
New Mexico	113,960	100,800	.....	113,960
Rocky Mountain area	74,520	75,400	.....	73,810
Total United States	3,710,491	3,462,900	.....	3,668,609

Increase of 41,882 bbls. daily.



SPARKS FROM THE NEWS

FISHING SEASON

A showing of oil on a drill stem test at a wildcat in Grant County, Oklahoma, the past week caused as much excitement as an angle worm in a school of catfish.

RUSSELL LEADS

Barton, Ellis, Rice and Russell counties are the pace-setters in field activity in Kansas, with Russell currently having a slight edge on the others.

NEW HIGH

Gasoline is now being consumed in the United States at the rate of 1,000 barrels every minute of the day and night.

SPECIALIZED ENERGY

The energy produced in the form of liquefied gases is equivalent to that produced by 228 prorated East Texas oil wells. But liquefied gas is highly specialized energy.

CRUDE METHODS

At an oil well on the highway near Kokomo, Ind., is this sign, "Crude Oil for Sale. Bring Your Buckets." It is a drive-in service, patrons buying the crude in amounts varying from enough to fill a cigaret lighter to the well's daily capacity of one barrel.

ADD GLOSSARY

A new one for the oil man's vocabulary. The "tattle-tale" well in Michigan was so named because it told whether North and South Buckeye fields connected. They did not.

NEW FROM OLD

A new oil pool was opened in Woodson County the past week, in a Kansas area that has been explored for oil for the last 30 years.

DEEP PAY

Drillers had to go nearly 11,000 feet to find it, but they succeeded in opening a new pool in St. Marys Parish, Louisiana, last week.

CHANGING ATTITUDE

A hopeful sign for September and the remainder of the year lies in the attitude of many crude producers and purchasers, supported by state proration bodies, that national output will have to be curtailed from its present peak levels.

MISSED IT

Attention of outsiders who think of the oil business in terms of gushers, is called to the unsuccessful development in the Opelika area of Texas. The investment in leases now apparently condemned exceeds one million dollars.

FOOLED GRASSHOPPERS

A Kansas driller submits a "Believe It or Not." After he had painted a rig green it became covered with thousands of grasshoppers. "Had it not been good metal nothing would have been left," he writes.

WIDE-OPEN SPACES

A motorist discovered he was traversing 25 to 40 miles of magnificent highway in Texas without finding a filling station. Is somebody neglecting an opportunity or just showing good sense?

SOMETHING WRONG

Some East Texas refiners say they get $1.63 for the products from a barrel of crude which costs them $1.65. Something besides mathematics seems needed here.

FOREIGN PURCHASES

A 25 per cent increase in exports of crude and refinery products has been an important factor so far this year in absorbing the record output of fields and refineries.

A LA CALIFORNIA

Scene in Bakersfield with producing wells located in field of poppies, lupins and paint brush

New Collective Bargaining Agreement Is in Effect

Refinery employes of Humble Oil & Refining Co. were among the first to perfect an independent organization to deal with managements covering working conditions. This action was taken after the company ended the employe representation plan, in effect for many years, fearing it was in violation of the Wagner Labor Relations Act. Similar action was taken by managements of other companies.

Humble employes not desiring to affiliate with an outside union organized a federation entirely independent of the company's management. The method of organization was described in detail in the May 6 issue of The Oil and Gas Journal. Since that time the representatives of the employes have been carrying on negotiations with company officials in line with the provisions of the Wagner act. This article describes the agreement with the Baytown, Tex., refinery employes, one of the largest plants of the petroleum industry.

Ninety per cent of the federation members at Baytown voted on the agreement and of that number 95 per cent voted favorably, only 40 votes being cast against the measure.

By GEORGE WEBER

HOUSTON, Tex., Aug. 16.—Labor relations in a number of Gulf Coast refineries have recently settled into a new and precedent-forming phase. With ratification this week, of a new collective bargaining agreement for Baytown employes of the Humble Oil & Refining Co., the Employes Federation at that plant enters into initial operation.

The Baytown group is the last of the four Humble plants to close negotiations. Agreements are in effect at the Ingleside, San Antonio and Neches refineries, and are being perfected in the production and pipe line divisions of the company at several points. In addition, employes of the Pan American Refining Corp. at Texas City are now represented through their own organization, and other labor groups in Gulf Coast refineries are contemplating similar action.

The new movement toward employe-organized unions on the Gulf Coast dates from the Supreme Court's decision supporting the Wagner labor relations act. It marks an outstanding example of independent workers' action, and indicates the accord generally found in this area between oil companies and labor.

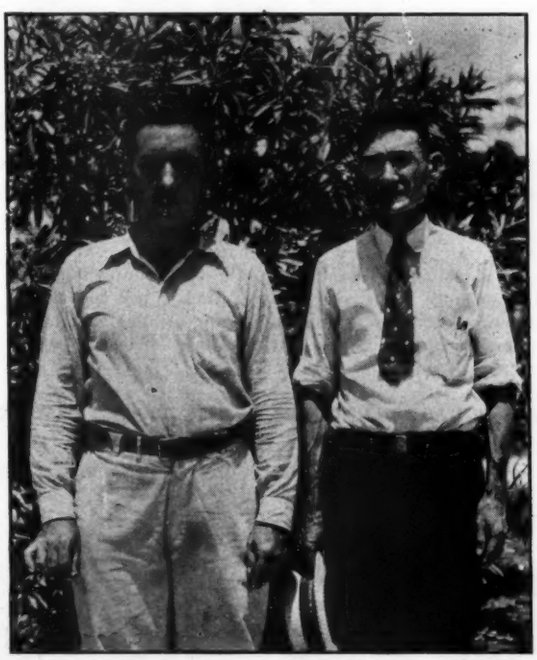
Shortly following the validation of the labor relations act in April of this year, the Humble Oil & Refining Co., believing its joint conference plan incompatible under provisions of the act, dissolved the company union and announced that its employes were free to choose whatever form of employe organization they wished. On the heels of this announcement came action from Baytown, where the company's largest refinery is located.

Representative workers in that plant, under the leadership of W. A. Thomas, organized a tentative unit named the Employes Federation of the Humble Oil & Refining Co. Temporary officers were elected, and articles for the new federation were drawn up. A plant election revealed that Baytown workers overwhelmingly chose to be represented by the new organization rather than by groups affiliated with the C.I.O. or A.F. of L.

From the first, the movement has characterized complete employe initiative, and detachment from any company connections. Realizing that theoretically, the flaws of the old joint conference plan lay in company sponsorship and support, now outlawed by the Wagner act, representatives of the new federation have approached company officials only after their organization was perfected and they were prepared to enter negotiations for collective bargaining.

Also significant is the attitude of the labor groups concerned to the two national labor organizations. Officials of the C.I.O. affiliated oil workers union were in the Gulf Coast at the time laying plans for a drive to unionize the oil industry. Acceptance of independent employe representation in competition with the current C.I.O. drive, contributed heavily to the latter group's subsequent inactivity as concerns Gulf Coast refining.

Although the last of the Humble refinery groups to ratify the new collective bargaining agreement, the Baytown union is the one which initiated action and set precedent for the others. After recognition of the organization as representing a majority of the Baytown workers, federation officers and company officials met to draw up a new labor code.



HEADING NEW FEDERATION: Karl Lowe Springer, vice president, and Hubert W. Kelso, president

Provisions covering all phases of labor relations were accepted by the management, ratified by the 47 members of the federation's central council, and this week went to the 2,596 members themselves for official acceptance.

When the polls were closed a sufficient majority of members had voted favorably on the measures, and the agreement now requires only the signatures of the two parties to become officially in order.

The collective bargaining agreement now ratified contains many new and liberal concessions to labor. It provides for the following:

Collective Bargaining Agreement

1. Regular pay rate plus one-half for all overtime.

2. A 36-hour week, eight-hour shifts and a pay period of 72 hours.

3. A wage rate of at least the prevailing scale for similar work in the district, taking into consideration the cost of living as determined by the U. S. Bureau of Labor Statistics.

4. Vacation schedules include, one week with pay for employes with one year's service, and two weeks with pay after two years of service. On the fifteenth year in the company's employ workers are given three weeks with pay, and on the twentieth and longer service anniversaries divisible by five, one month with pay is granted. Vacations between these special anniversaries revert to the regular two-week periods.

5. Overtime is counted for labor on the following holidays: New Years Day, San Jacinto Day, July 4, Labor Day, Armistice Day, Thanksgiving and Christmas. Salaried workers in the routine clerical group with incomes under $2,500 are allowed overtime on the above-named holidays unless time is made up in time off within 30 days.

6. Full-pay is provided during leave of absence for jury duty. This provision replaces the former plan under which the difference between wages and jury pay was made up by the company.

7. No discrimination will be made due to membership or nonmembership in any church, society, fraternity, union or other labor organization.

8. Promotion shall be based on ability and seniority. This marks an important departure from usual union agreements where seniority alone is taken as the promotion basis.

9. Provision is made for change or amendment at any time by vote of the parties to the agreement.

Outstanding are the clauses on promotion, holidays, vacations and jury duty. The new agreement represents one of the most liberal labor policies in all United

(Continued on Page 30)

Liquefied Gases Becoming Important Products of the

By W. T. ZIEGENHAIN

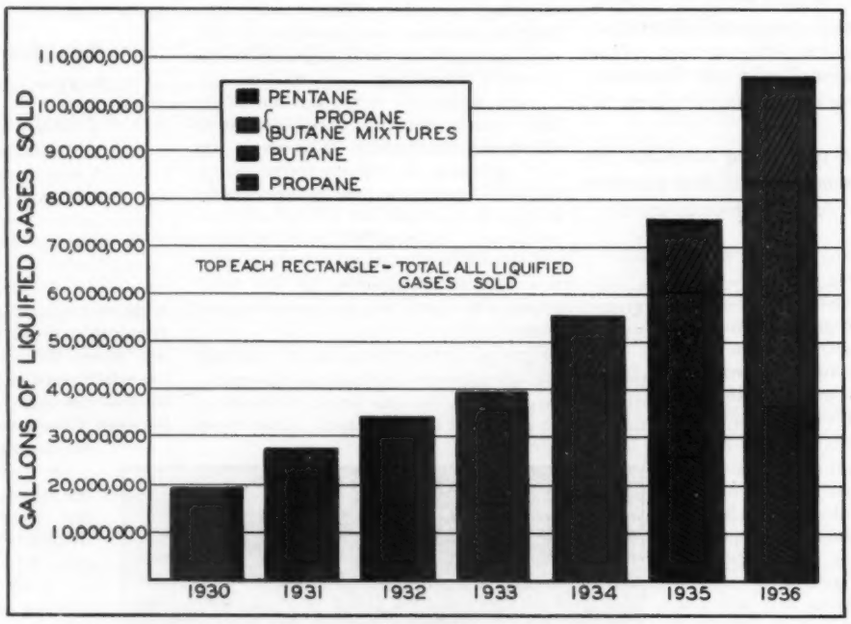
Men engaged in the oil business who think only in terms of selling large volumes find it difficult to give proper credit to the liquefied gas industry for the job of selling which this young associate is doing. Nor can they see anything but inglorious work ahead in manufacturing and distributing this family of highly specialized liquid gases which has been weighted down individually with such technical names as propane, butane, pentane, iso-butane, etc.

The sale, last year, of 106,652,000 gallons of these gases remains unimpressive to those in the oil business who now see that volume of gasoline moving through filling stations every two days, or at the rate of approximately 1,000 bbls. every minute. While it may appear that the work of the liquefied gas industry has not been fully understood and appreciated, the accomplishments of the liquefied gas industry have not suffered. Instead, this treatment may have allowed it to grow more strongly.

Those who represent the liquefied gas industry early recognized the need to proceed cautiously. Too many people in the business would have made it difficult to standardize on practices that promote the greatest safety in the design and use of the equipment. This was most essential to this new industry. The men in charge knew that serious mishaps in the unloading, storing or use of the gas cylinders would not only retard the growth of the new industry but would weigh it down with public prejudices; with hastily and ill-designed laws and a lack of selfconfidence that could permanently cripple the industry.

For these reasons it probably is well that the industry has been allowed to progress without much attention and fortunately the relatively few people who have been charged with the responsibility of leading the new industry along safe and progressive lines have not only accomplished these results effectively but have been able to show an increase in the volume of gases sold every year since the industry has been recognized as a separate branch of the petroleum business. The extent of this growth may be compared with that of the petroleum industry generally.

Based upon the relative quantities of crude oil produced in the United States the petroleum industry may claim an increase in operations from 1930 to 1936 of 21 per cent, but if the production of petroleum gases in the United States is compared for the same period the liquefied gas industry is able to report an increase of 492 per cent.



Trend in sale of liquefied gases. New peak expected in 1937

At present approximately 63 per cent of the liquefied gases marketed in this country is moved into industrial plants as fuel, 9 per cent is absorbed by gas manufacturing utilities and the remaining 28 per cent goes into homes as bottled gas fuel.

The increase in the industrial sales over the past 10 years has been most encouraging and it has been this business that offers the greatest promise of expanding demands for the products in the immediate future.

The industries which are the best customers include the automotive, steel, railroad, glass and chemical. In general, they prefer liquefied gases because of the latter's greater convenience and cleanliness and concentrated heating value.

In the automotive industry propane is used to heat-treat some of the special steel parts of the car engines and running gear. In this use propane and propane-butane mixtures afford an exceptionally clean and intense heat and the temperature within the heated area may be kept constant more easily than with most fuels. By mixing the propane with butane the flame temperature may be altered within the respective heating values of the two gases, and in this manner additional flexibility is afforded in using liquefied gases for this work.

Propane and propane-butane mixtures, in addition to finding use as heat treating fuels, are often used as a source of fuel for the automobile engine when it is tested on the block in the assembly plant. This fuel is held in a central storage and piped to the motor assembly room and in this room individual lines run to each testing block.

The use of liquefied gases in the steel industry is pretty well restricted at present to heat treating in a manner similar to that used in the automobile assembly plants. In addition, it has been found convenient to utilize the intense heat of the liquefied gas flame to cut scrap and to trim edges off castings and forgings.

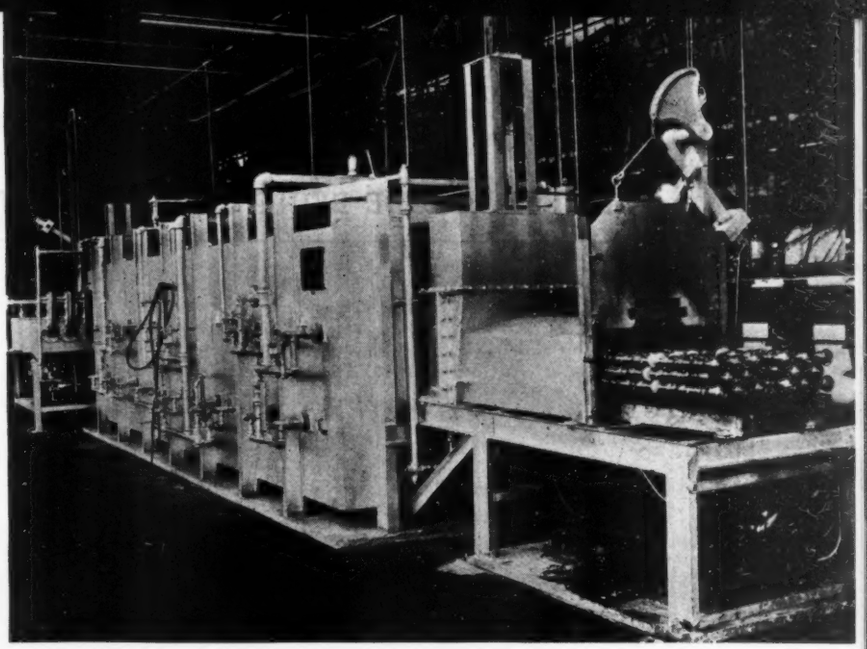
Most encouraging has been the growing use of

QUANTITY OF PROPANE, BUTANE, PENTANE AND MIXTURES SOLD AS LIQUEFIED GASES IN THE UNITED STATES DURING 1936

Year—	Propane (gal.)	Butane (gal.)	Propane-butane mixtures (gal.)	Pentane (gal.)	Total (gal.)	Increase over previous year (gal.)	Increase over previous year %
1922	.....	.....	.....	.....	222,641	.....	.....
1923	.....	.....	.....	.....	276,863	54,220	24.4
1924	.....	.....	.....	.....	376,683	99,820	36.0
1925	.....	Prior to 1930 sale of liquefied gases		.....	403,674	26,991	7.2
1926	.....	was confined largely to bottled gas		.....	465,085	61,411	15.2
1927	.....	.....	.....	.....	1,091,005	625,920	134.6
1928	.....	.....	.....	.....	4,522,899	3,431,894	314.6
1929	.....	.....	.....	.....	9,930,964	5,408,065	119.6
1930	11,500,000	.....	*6,517,000	.....	18,017,000	8,086,036	81.4
1931	15,000,000	.....	*13,770,000	.....	28,770,000	10,753,000	59.7
1932	15,182,000	14,662,000	3,417,000	854,000	34,115,000	5,345,000	18.6
1933	15,835,000	19,056,000	3,226,000	814,000	38,931,000	4,816,000	14.1
1934	18,681,000	25,553,000	10,271,000	1,922,000	56,427,000	17,496,000	44.9
1935	26,814,000	34,084,000	13,492,000	2,465,000	76,855,000	20,428,000	36.2
1936	36,502,000	47,455,000	20,120,000	2,575,000	106,652,000	29,797,000	38.9

*Includes butane and pentane.

Increasingly Oil Industry



Heat-treating automobile timing shafts in a furnace using liquefied gases

liquefied gases by the railroad industry. Propane has been the principal gas used in this work and the quantity consumed has been growing rapidly. The use of propane as a fuel to drive individual ice engines which in turn cool the air in air-conditioned passenger coaches is of major importance. In this work 20 pounds of propane has the cooling value of 200 pounds of ice and the cost of the refrigeration approximates $1 for each 1,000 miles of car travel. Sufficiently large propane storage tanks are supplied to make it unnecessary to replace the fuel supply often. Round trips between Chicago and the West Coast have been made using but three tanks of propane. Other important uses made of propane by the railroads include the heat-treating of steel parts in the engine repair shops, torch cutting, in heaters to keep switches operative in winter, in the stoves on dining cars and for heating fruit houses, shops and stations.

Another important railroad use for liquefied gases as fuel for internal engines is that of driving combination gas-electric locomotives in short-haul service and in switching service. This has found principal application along the West Coast.

Obviously, if propane and butane serve as economical engine fuels in the railroad industry other industries can find similar applications. Farm tractors, hoisting engines, buses and individual power generating plants utilize butane as a power source.

In all it has been estimated that there are 2,000 such units scattered throughout the United States and in 1936 these consumed 12,476,000 gallons of liquefied gases according to the Bureau of Mines.

Polymerization

In the future probably the largest consumer of butane will be the oil industry itself. In recent years, large quantities of butane have been segregated during the summer months as a result of stabilization of refinery motor fuels, and in the following winter this butane has been blended into the gasoline to promote starting. This practice, involved large quantities but did not take all of the butane that could be recovered nor was the practice used by more than the very largest refiners. As a result, butane has often been considered a drug on the market, but now butane is assuming an entirely different role. It has been found to be a most convenient and economical charging stock for polymerization units in the manufacture of high-octane motor fuels. Large butane recovery plants are now concentrated in the East Texas field and in West Texas and a large portion of the butane recovered is sent to polymerization units in the Mid-Continent and on the Gulf Coast.

The quantity of propane needed by refiners for dewaxing lubricants, a practice developed within recent years, will not take more than a small portion of the total quantity they can recover.

In some instances, refiners may not choose to recover either the butane nor propane from the gases coming from their stills but will sell the gas to chemical plants where it will be processed to make alcohols, antifreeze compounds, solvents, etc.

The quantity of gases now processed in this manner remains indefinite but within the past three years large chemical plants of this nature have come into operation in the Chicago refining area, and in California and the total is probably very large. In addition to the quantity of gases handled by these plants approximately 14,450,000 gallons of these gases in liquid form are consumed in chemical plants.

Drying sand molds with a liquefied gas flame in a railroad foundry casting car parts

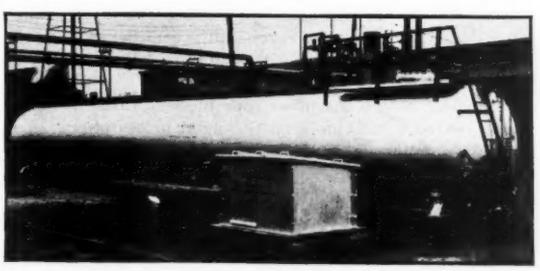
Bottled Gas

When liquefied gases were first put on the market, their principal outlet was among the wealthy rural home owners and exclusive isolated lodges where it was burned in cook stoves. As the popularity of these fuels increased they gradually found their way into what may be termed the "average" rural homes and now bottled gas may be found in this service and in direct competition with oil, coal or electricity almost anywhere. The principal factor tending to dampen the normal expansion of rural liquefied gas sales is the government's rural electrification program. Thus far the program has moved very slowly.

In 1936 approximately 30,000,000 gallons of these gases, mostly propane, were consumed as bottled gas in homes, this representing an increase of 40 per cent over the 1935 consumption. While most of this increase in sales can probably be accounted for by the improved economic conditions among farmers, the more intensive sales drives and lower cost of stoves and distribution systems lend their influence.

In recent months the sale of packaged gases has been started within a limited area, the plan of marketing being an innovation. Under this plan the housewife is able to buy a small cylinder of propane gas at the grocery store or general market. It is small enough for her to carry in the car and handle after reaching home. The cylinder itself is made of relatively light metal but is strong enough to be entirely safe. Each cylinder is fitted with a screw cap which enables the owner of the system to quickly and conveniently connect the full cylinder into the system by means of a flexible supply line.

The third major outlet for liquefied gases is among gas distributing companies. At the beginning of this year there were over 31,000 customers taking liquefied gases through mains in the same manner as natural or artificial gas is piped into homes throughout cities. These customers were located in 30 states and were being supplied through 178 plants.



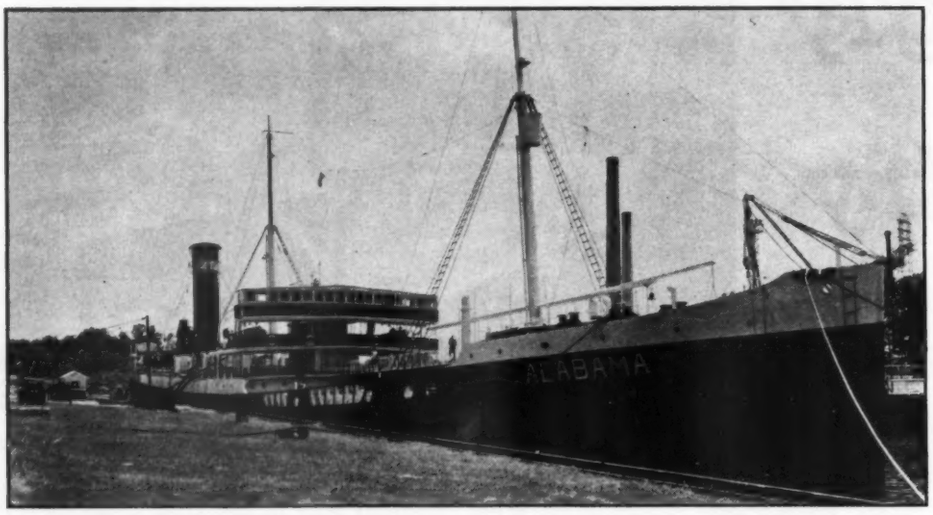
Type of storage tank used for liquefied gas industrial distribution system. Note its large capacity

The greater portion of the gas thus supplied was butane mixed with air and had a heating value ranging between 520 and 900 B.t.u. Such mixtures were then being supplied to 124 communities in 28 states by 60 companies according to the American Gas Association. The association further reports that at that time mixtures of butane and propane having a heating value of 2,800 to 3,000 B.t.u. were being supplied to 14 communities in California and Nevada through six companies and unmixed propane with a heating value of 2,550 B.t.u. was being supplied to 40 communities in Maryland, Minnesota, New Jersey, North Dakota, Virginia and Wisconsin by six companies.

Exports

Practically all of the liquefied gases recovered in the United States are consumed here. The total quantity exported in 1936 amounted to only 4,897,000 gallons and of this quantity, 4,128,000 gallons went to France. There the gas is utilized principally as a fuel for cooking. Practically all of the quantity exported is butane.

ARTESIA CRUDE BEING SHIPPED TO ITALY



The Trans-Pecos Pipe Line Co. is running 200,000 bbls. held in storage from the Lea, New Mexico, pump station to Houston, Tex., to be loaded on a tanker for Trieste, Italy. The line has been in operation about 75 days and is now running an average of about 3,200 bbls. daily. A. H. Brinton, an engineer of Houston, Tex., is in Artesia making a survey of the potential of the eastern Eddy County fields, assisted by Terry Hornaday, resident manager of the Trans-Pecos Pipe Line Co. F. A. Hornaday is president of the company, which is reported to have a six-year contract with the Italian government to supply the new refinery at Trieste.

Texas Contract to Sinclair

AUSTIN, Tex.—Sinclair Oil & Refining Co. has received a contract to supply the state with about $1,000,000 of oil and gasoline during the next fiscal year. A discount of seven-tenths cent per gallon off posted tank-wagon prices on bulk deliveries was included.

Sinclair, as did the other four bidders, offered retail delivery gasoline at tank-wagon prices plus 4 cents a gallon, which is the equivalent of usual posted retail prices.

The board estimated the state would use 6,140,000 gallons of gasoline, of which 5,400,000 would be delivered in bulk, 352,275 gallons of kerosene, 241,000 gallons of lubricating oil and 337,900 pounds of grease.

Kansas Demands Hearing

The Kansas Corporation Commission will hold a market demand hearing in Wichita August 24 to determine the state's allowable production of crude oil in September, it was announced by E. G. Dahlgren, conservation officer. The August allowable is 200,500 bbls. daily, an increase of 4,900 bbls. over July. Daily production in Kansas was less than the August allowable early in the month, but jumped to 206,050 bbls. the past week.

New Pool in Ohio

H. D. Sissons, field manager of Stevens Oil Co., wires from Napoleon, Ohio, that the company's No. 2 Sampsel, in section 36, Harrison Township, Henry County, Ohio, definitely establishes a new pool. In the first 24 hours the well is credited with 290 bbls. of oil and 1,800,000 feet of gas. It is the third producer completed on the structure by the Stevens Oil Co. Henry County is in northwestern Ohio, west of Bowling Green and southwest of Toledo.

Compact Extended

WASHINGTON, D. C.—President Roosevelt has signed the resolution extending the Interstate Oil Compact until September 1, 1939.

THE MARKETS*

CRUDE OIL: *Increasing support for the plan to reduce the present peak crude oil production not later than September 1 was the outstanding development of the week having significance in crude markets. Certain buyers unable to "farm out" additional crude in excess of their own requirements have indicated they will no longer carry on storage programs. It is estimated a general curtailment of 3 to 4 per cent is desirable for next month. Sun Oil Co. reduced postings for several Gulf Coast crudes on grades above 35 A.P.I. gravity, 2 to 12 cents per barrel. Gravities under 35 unchanged.*

REFINERY: *Kerosene and light distillates are the strongest products and higher price levels are predicted for several refining centers in the immediate future. Heavy fuels are also strong. Gasoline shipments are at the high point of the year with supplies adequate. Wax is strong.*

TANK-WAGON AND SERVICE STATION: *Price changes confined to both advances and reductions in gasoline and kerosene at scattered points in the Middle West.*

FINANCIAL: *Rising trend, shown by oil shares, helped by promise of excellent earnings reports in third quarter. Lively demand for leading issues. Average of 30 active oil stocks for week ending August 14: High, 43.44; low, 41.76; close, 43.03. Week ending August 7: High, 42.92; low, 41.87; close, 42.09.*

**Detailed information in market section.*

Presents Paper on Diesel Fuels

CHICAGO.—William H. Hubner, automotive engineer of Universal Oil Products Co., will present "A Study of Diesel Fuels," at the annual oil and gas power meeting of the American Society of Mechanical Engineers, at State College, Pa., on August 21. Dr. Gustav Egloff is coauthor of the paper. The greater part of the meeting, which runs from August 18 to 21, will be devoted to the discussion of diesel engines, their design, operation, fuels and lubrication.

Indiana Earnings

Standard Oil Co. of Indiana reports consolidated net profits of $27,904,211.17 for the first six months of 1937, equal to $1.83 a share for the half year on 15,235,323 shares outstanding at June 30. The total earnings are for the parent company and all subsidiaries after depreciation, depletion, and all other charges, and after providing for the normal federal income taxes. No provision has been made in this period for possible federal surtaxes on undistributed profits.

Net earnings for the first half of 1936 amounted to $22,015,537.48, equal to $1.45 a share on the 15,215,677 shares outstanding at June 30 that year.

C.I.O. Marketing Drive

NEW YORK, Aug. 17.—Allan S. Haywood, regional director of the C.I.O., announced in New York last week that the Oil Workers International Union has established an office here in preparation for a drive to organize employes in the marketing division of the petroleum industry, including workers at terminals and bulk plants, truck drivers and gasoline service station attendants.

State Land Sale in Michigan

SAGINAW, Mich., Aug. 16.—Mineral rights on approximately 38,000 acres of state-owned lands in Roscommon, Arenac, Otsego, Clare, Crawford, Midland and Bay counties are to be offered at public auction September 3 at the state conservation department's offices in Lansing.

Of the 38,000 acres now being offered for leasing, 22,000 are in Roscommon County, 8,500 in Gladwin, 3,500 in Arenac, 2,800 in Otsego, 1,500 in Bay, 360 in Midland, 240 in Crawford and 80 in Clare.

Auto Exports Grow

NEW YORK, Aug. 17.—For the first seven months of 1937, American automobile manufacturers shipped a total of 3,362,970 units, 10 per cent above the same period in 1936 and exceeding all like periods, excepting 1929. July shipments from factories in the United States and Canada amounted to 445,550 units, a decline of 1 per cent unler July, 1936.

Leaded Motor Fuel Abroad

Foreign consumption of leaded motor fuel is rising, according to a report by J. Coard Taylor, vice president, Ethyl Gasoline Corp. The 1937 trend is sharply upward both in Europe and the British Empire.

In Italy there was a gain of 100 per cent in use of Ethyl, or premium gasoline, during the first four months. In Great Britain and Ireland the Ethyl distribution in the same period increased 31.8 per cent, while the total increase of all gasolines distributed by the Ethyl licensees in this area was 19.3 per cent.

In Australia, figures for the first five months disclose a rise of 71.9 per cent in Ethyl and of 27 per cent in leaded regular gasoline. In Canada, Ethyl sales rose 55.2 per cent, while the percentage advance in all gasolines sold by the licensees was 22.8.

In Alaska, the Canal Zone, Hawaii and the Philippines there was an increase of 39.4 per cent in the use of Ethyl, contrasting with 2.4 per cent increase in all gasolines sold by licensees.

Great Britain licensees of Ethyl Corp. include Anglo-American Oil Co., Irish-American Oil Co., Redline Glico, Ltd., Shell-Mex and B. P., Ltd., and Texas Co. of Ireland.

Largest Oil Reserve Claimed by Russia at Moscow Congress

By WILLIAM J. KEMNITZER

MOSCOW, U.S.S.R.—The Seventeenth International Geological Congress held here from July 21 to 29 proved of unusual interest and had an attendance of more than 2,500 geologists and technicians with 400 delegates from foreign countries. The Russians dominated the meetings but their contributions were of great interest and added much to the literature on the geology of that great country. Especial attention was given to the geology of petroleum because, as stated by I. M. Gubkin, member of Academy of Sciences U.S.S.R. in his opening address, "There is no need to prove to the present congress the vital economic and political part played by oil in the entire world economy."

While the Russian delegation stressed the importance of the oil reserves of their country there were many other scientific papers upon petroleum geology presented by visitors from several of the principal oil producing countries. The United States was well represented, having the largest number of delegates from any foreign country, and several papers upon oil conditions in this country were presented. Dr. Parker D. Trask presented a paper upon "Mother Substances of Petroleum" dealing with the work he has been in charge of for some time as director of the investigation being sponsored by the U. S. Geological Survey and American Petroleum Institute jointly. Richard Joel Russell, of the Louisiana State University and representative of the Association of American Geographers, presented a paper on "Gulf Coast Geosynclines, America's Great Petroleum Reserve" and Dr. Henry V. Howe, director of the School of Geology, Louisiana State University, had a paper on the same area but dealt with the stratigraphy, while Mr. Russell discussed geomorphogeny.

The importance of the Russian contributions can best be indicated by reference to the vast amount of geological research now being carried on under the soviet government. Under the tsarist regime only about 500,000 rubles per year was contributed for geological research whereas under the soviet government hundreds of millions of rubles are spent yearly for geology and the workers in that science are counted in the tens of thousands. More than 2,000 applications were filed by soviet geologists who wished to present papers before the congress.

The principal address by I. M. Gubkin summarizes the results of geological research as applied to the development of new sources of petroleum in that country and the following is quoted directly from that paper:

"The principal oil-producing regions prior to the October Revolution were within the limits of the Trans-Caucasus (Baku district, the Apsheron Peninsula, which gave more than 85 per cent of the total output in the country) and North Caucasus (Grozny and Maikop districts).

"Prospecting work greatly developed throughout the entire territory of the Soviet Union following the nationalization of the oil industry and the geographical distribution of petroleum regions is becoming different. New regions acquired and still continue to acquire growing importance—the West Urals, Middle Volga district, Prikama district, Middle Asia, etc. The new face of Siberia, hitherto unknown, begins to appear. The old, existing petroleum fields of Baku, Grozny, Maikop and Emba have considerably increased their oil-bearing areas.

"About 45 oil fields are at present being worked industrially, about 80 fields are being prospected by drilling; during the existence of the soviet government more than 160 fields have been surveyed and about 650 structures are at present under survey and ready to be converted into the objective for introduction of deep industrial prospecting. We have registered more than 400 different structures in the estimation of reserves in Azerbaijan alone. It is, therefore, no cause for wonder that our petroleum resources grow like the knight in the fairy tales, not daily, but hourly, and what has been calculated but recently is soon to be found out of date.

"The actual course of the development of soviet petroleum industry does not exhaust, but raises petroleum resources of the U.S.S.R., as the growth of reserves covers the present day consumption dozens of times over. This consumption is increasing annually in the Soviet Union and very much petroleum will be required in the near future. It is, therefore, essential that we know, more or less exactly, the resources which we possess in order to properly plan our petroleum industry. We, therefore, cannot be contented by ascertaining merely one category of reserves, but must distribute our resources into several qualified groups. The actual

Sojuz Photo

I. M. GUBKIN

Vice president of Academy of Sciences and President of the Organization Committee of the International Geological Congress

Coming Series on the U.S.S.R.

W. J. KEMNITZER

William J. Kemnitzer engineer and geologist, who attended the recent sessions of the Seventeenth International Geological Congress at Moscow, is now engaged in the preparation of a series of articles to appear exclusively in The Oil and Gas Journal describing modern oil operations in the U.S.S.R. The series will describe producing, refining, transporting and distributing practices in the second largest oil producing country. The articles will be based on first hand information obtained from those in charge of the expanding operations of the Soviets.

The accompanying article is the second report of the International Congress giving in detail the estimated oil reserves of the U.S.S.R. located in two hemispheres. An earlier report of other proceedings of the Congress appeared in the August 5th issue.

method of estimation applied in our plan-conducted country is somewhat different than that in other states. It is essential that we know what reserves are ready and prospected in order to plan our production.

"In view of the vital importance of the question of classification of resources into categories, I would once more like to briefly draw attention to this: Our petroleum resources are subdivided, according to the extent of their preparation for exploitation and the degree to which they are surveyed, into the following five categories:

"*1. Prepared (A_1).*

"This is understood to embrace the residuary industrial reserves in those horizons and seams which are being worked by *existing wells.*

2. Surveyed (A_2).

"These embrace the surveyed and outlined resources or those prepared for the sinking of new wells to the permissible degree of density of wells. These two categories, necessary in planning production, are estimated by means of curvatures.

"*3. Visible (B).*

"These are reserves which contain deposits disclosed by several wells, with an established industrial flow of petroleum but not outlined and completely surveyed.

"To the same category are referred petroleum reserves in the lower-seated horizons yet undisclosed by drilling in the worked fields, where the presence of petroleum gives no cause for doubt on the basis of the experience in working adjacent fields where these, as yet undisclosed horizons, contain industrial petroleum and are already being worked. Drilling to horizons with visible reserves (B) has the object of outlining and preparation for continuous exploitation. Reserves are calculated mainly by the volume method.

"*4. Assumed (C_1).*

"*In the areas being worked* this represents the petroleum reserves in those seams and horizons the existence of which is not established and is assumed on the grounds of evidence of the geological structure of the field and locality in which they are situated.

"*In the areas under survey* they are those reserves which are assumed in the established and sometimes partly already surveyed structures, but *not yet verified* for their content of industrial petroleum. Reserves of this nature are essential for us in planning the introduction and exploitation also of new horizons and, mainly, of new structures. These reserves are estimated by the volume method according to indices obtained from the experience of working up petroleum deposits in the same locality in which the structure concerned is situated.

"*5 Possible (C_2).*

"Are those reserves which, due to several geological considerations, are considered possible in structures yet unestablished, undisclosed and the presence of which is only assumed. An idea of the geological formation of these structures and their extent is rendered by the method of analogy.

"Calculation of these reserves are necessary for us in developing wide perspective planning for the creation of new petroleum bases like that which we are at present creating in the east of the European part of the Soviet Union.

"In addition to these categories, for which we render numerical expression in tons, essential for our work of planning, there exist so-called extra-category reserves—"geologically possible resources," which are not included in our calculations at all. These are possible reserves in localities and districts which, according to considerations of a geological nature, may be found to be oil-bearing. Certain districts in Siberia or, for instance, the sub-Moscow depression, represent such localities.

"It is with this classification of reserves that we approached the matter of calculating and evaluating the petroleum resources of our Soviet Union. We have revised anew all our petroleum districts and localities and have taken into account and investigated every structure situated therein. A great work has been accomplished wherein dozens of qualified geologists and persons acquainted with different districts and fields have all participated. Abundant initial data, obtained from the localities, has been utilized. This labor has given form to the following collated table of petroleum reserves on January 1, 1937 (in millions of tons.) (A Russian metric ton is equivalent to 7.328 bbls. of 42 U. S. gallons each.)

CATEGORY OF RESERVES

"District and Region	A	B	A+B	C_1	C_2	Total
Azerbaijan S. S. R.						
1. Apsheron Peninsula	123.1	407.6	530.7	182.8	67.8	781.3
2. Kabristano-Sheimakh Dist.	....	21.6	21.6	503.8	211.7	737.1
3. Prikurin region	.....	.....	.....	279.5	298.6	578.1
4. Other regions	....	18.4	18.4	374.2	63 2	455.8
Total for Azerbaijan S. S. R.	123.1	447.6	570.7	1,340.3	641.3	2,652.3
Georgian S. S. R.						
Throughout the Georgian S. S. R.	2.6	34 6	37 2	107.5	31.5	176.2
North-Eastern Caucasus						
1. Grozny Dist.	15.5	52.0	67.5	107.3	.....	174.8
2. Daghestan Dist.	20.00	47.5	67.5	78.5	.....	146.0
Total for the Northeast Caucasus	35 5	99.5	135.0	185.8	.....	320.8
Kuban-Black Sea District						
Maikop region) Kuban region) Taman region Crimea region)	9 2	12.6	21.8	63 4	71.7	156.9
Emba Oil-Bearing District						
	30.6	1.3	31.9	618.5	540.0	1,190.4
West Slopes of the Urals, the Volga Region and the Kalmyk Autonomous S. S. R.						
1. West Urals (Bashkir A.S.S.R.)	8 8	10.4	19.2	215.0	131.0	365.2
2. Orenburg Aktyubinsk region	.....	.....	.....	35.1	67.0	102.1
3. Permian, Priuralie and Prikamie	4.1	3 6	7.7	102.8	243.5	354.0
4. Kuibyshev region	3 0	4.7	7.7	81.7	98.1	187.5
5. Lower Volga and Kalmyk-Saltz Steppes	.....	.....	.....	.....	181.7	181.7
Total for the West Urals, Volga and the Kalmyk A.S.S.R.	15 9	18.7	34.6	434.6	721.3	1,190.5
Northern District						
Area being exploited	0 7	10.0	10.7	11.4	.....	22.1
Sakhalin Island						
Sakhalin Island	10 3	10.1	20.4	98.5	220.9	339.8
Middle Asia						
1. Turkmenian S.S.R.	0 6	2.7	3.3	67.1	182.6	253.0
2. Ferghan Valley	1 0	2.7	3.7	11.6	40.1	55.4
3. South Tadjikistan and South Uzbekistan	1 4	11.9	13.3	55.7	49.7	118.7
Total for Middle Asia	3.0	17 3	20 3	134.4	272.4	427.1
Total for the U.S.S.R.	230.7	652.0	882.7	2,994.5	2,499.1	6,376.3

"As can be seen from this table the superior category reserves (A+B) comprise 882.7 million tons, compared with the estimate made for January 1, 1935, they have increased 882.7=212.5= 4.2 times. Reserves under category C_1 are equal to 2,994 million tons and compared with the reserves for January 1, 1935, are 2,994.5=312.7=9.6 times increase, whilst those of category C_2 equal 2,499.1 million tons, which, compared with the reserves of January 1, 1935, show a decrease of 184 million tons from 2,683.1 to 2,499.1. The total reserves are estimated at 6,376.3 million tons, an increase compared with the reserves for January 1, 1935, 3,208 or nearly double.

"How can these calculations of ours be harmonized with the estimations of other countries, where the reserves are calculated by categories of 'proven' ones and with what does this qualification correspond in the system of our estimations to which category or categories? When pentrating into that essence of the conception of 'proven' given to it by the Americans, we are apt to meet with great difficulties, as the precise determination of this term is unknown to us. It appears to be clear, however, that they do not include reserves of structures not tested on an industrial scale. In this case 'proven' reserves would correspond to our category A+B. These are the reserves in the localities at present under exploitation. Such an interpretation in calculating reserves on a world wide scale would mean placing the figure of 882.7 million tons as pertaining to the U.S.S.R., or 6,532 million barrels, in which event our place in the world resources would be second. Such an evaluation of our petroleum resources would obviously be incorrect, as the figure of 882.7 million tons in no way at all characterizes our reserves; it only characterizes the degree of survey and preparation for exploitation and nothing more.

Some Sort of Discord

"We ourselves appreciate that some sort of discord exists here and we must intensify prospecting and the transfer of lower categories to higher. With the object of characterizing our petroleum resources, it would be most correct for us to accept the figure of reserves as categories A+B+C_1, representing the sum total of actual (A); visible (B) and assumed (C_1) reserves; the category C_1 reserves, moreover, pertaining to the structures known in respect of their geological formation and their assumed oil-bearing qualities but yet not tested on an industrial scale. It is this assumed category which, for us, represents 'proven reserves.'

"This interpretation of ours is in complete accord with determination of categories of reserves given in the 'Statistical Year-Book of the World Power Conference' on page 45, stating that 'proved petroleum reserves' denote the total area within the country concerned, consisting of all the exploited fields plus likewise all other areas which, by means of geological survey, drilling or other prospecting methods become known or may, with grounds, be accepted as containing petroleum in quantities sufficient in order to guarantee actual exploitation.

"In accordance with this determination of the category of 'proved petroleum reserves' the total of our categories A+B+C_1 should be allocated to the 'proven reserves' and, in the estimation of world reserves, the figure 3,877.2 million tons should stand for the U.S.S.R., the further increase of which is insured by the transfer, during subsequent prospecting, of the possible reserves (C_2) figure of 2,500 million tons to a higher category. Comparison of our higher-category reserves with the figures of our annually increasing production throughout the Soviet Union gives no cause for apprehension, but, for individual localities, more energetic measures are required in order to ascertain categories A_1 and A_2."

The remainder of Dr. Gubkin's paper was devoted to a discussion of the new conception of petroleum geology as advanced by A. I. Levorsen, E. DeGolyer and Wallace E. Pratt all of which have been covered in articles published in The Oil and Gas Journal.

In addition to his principal paper upon U.S. S.R. oil reserves by I. M. Gubkin and another paper by him on "The Mode of Occurrence of Oil in the Fields of the North Caucasus;" there were numerous other papers prepared by Soviet geologists dealing with the petroleum geology of the U.S.S.R.

Geology of Western Minnesota: Traverse, Bigstone Counties

By GEORGE A. THIEL
Geologist, Minnesota Geological Survey

In view of the fact that numerous inquiries have been received regarding the possibility of commercial oil production in the Wheaton-Dumont region in western Minnesota, this brief note is presented to show the subsurface geologic structure of the area. Most of the data shown on the accompanying map were compiled from various geologic bulletins published by state and federal surveys.* These data were supplemented and brought up to date by a recent field investigation by the writer. A geologic map of Minnesota published by the Minnesota Geological Survey in 1932 is available at the office of the University Press, University of Minnesota, Minneapolis.

Well Starts Leasing

An oil well rated at about 3 bbls. per day of 37 degrees A.P.I. gravity crude oil was completed in the SE section 2, Township 126n, Range 47w, in Walls Township, Traverse County, near the town of Wheaton, Minn., about June 10. This has started an active leasing campaign in this area. The hole is 864 feet deep and as nearly as can be determined the oil is coming from the Dakota sandstone. Samples of this formation show it to be well saturated with oil and to consist of coarse sand in which rounded pebbles of granite, mica and quartz were embedded. The discovery well was drilled by Robert Lent, formerly of Greybull, Wyo.

Surface Features

Traverse County includes the southern part of the Red River Valley that was once occupied by Glacial Lake Agassiz. Bigstone County to the south has the headwaters of the Minnesota River. This county consists of a nearly level plain about 1,100 feet above sea level. The area is bordered on the west and south by a broad, deep valley, cut to a depth of approximately 150 feet. This valley originated when the outlet of the Red River of the North was blocked by a Pleistocene ice sheet and the waters from the ice discharged southward through the present Minnesota River. A small alluvial fan deposited by the Little Minnesota River forms a dam between Lake Traverse and Bigstone Lake. This low alluvial dam serves as the present divide between the Mississippi and Hudson Bay drainage basins.

Glacial Deposits

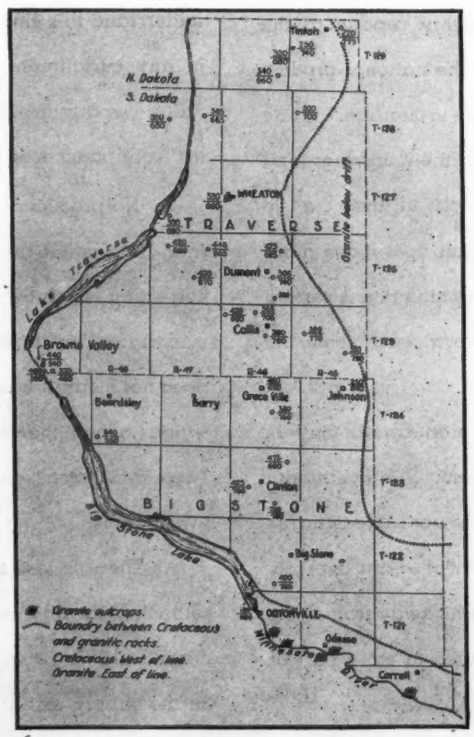
The southern part of the area, beyond the basin of Lake Agassiz, is covered by a till plain that is crossed by several weakly developed and gently rolling moraines on the upland southeast of Lake Traverse. The drift is mainly clayey till derived chiefly from the Cretaceous shales of the region to the north. Locally it consists of boulder clay and deposits of sand an gravel. The drift varies in thickness from 0 to 250 feet. In the Lake Agassiz Basin in the Wheaton region the lake sediments are so thin that the surface deposits are mapped as "lake-washed clayey till." The margin of this topographic basin is outlined by a series of beach ridges.

Cretaceous Rocks

Sedimentary rocks of Cretaceous age occur over most of the area. They consist chiefly of thin basal gravel and sands overlain by soft bluish-gray clay-shale. The sand is generally from only a few inches thick to a few feet thick. In the region of Brown's Valley, however, the Cretaceous sediments reach a maximum thickness of 440 feet. There the basal sands are cemented to form a soft sandstone. This sandstone is correlated with the Dakota sandstone of the Great Plains, and the shales are thought to be of Benton age.

Pre-Cambrian Crystalline Rocks

The Cretaceous rocks lie unconformably upon pre-Cambrian schists and gneisses. All drilling that has penetrated the Cretaceous shows that the rocks below the unconformity are decomposed to depths of from 20 to 150 feet, to a soft mass of gritty or putty-like white and green clays. These clays toughen with increasing depth and grade into unaltered crystalline rocks. In the Wheaton and Ortonville regions the rock is a biotite granite gneiss, whereas at Graceville, Dumont and Brown's Valley mica-schists are encountered. The upper surface of these rocks slopes toward the west. The accompanying map shows the depth to crystalline rocks and the elevation of the top of these rocks above sea level.



Traverse and Bigstone counties, Minnesota. Circles show artesian wells. Upper figure near circle shows depth to granite; lower figure shows elevation of granite above sea-level

Oil and Gas Possibilities

Locally the Cretaceous shales contain small pockets of gas. Those near Wheaton were known and described by N. H. Winchell more than half a century ago. Similar occurrences of gas are found in the Nebraskan and Kansan drifts of southern Minnesota. The pressure is not sufficiently great to warrant commercial exploitation.

The wedging of the Dakota sandstone against the westward sloping surface of the pre-Cambrian rocks might serve as a zone favorable for the accumulation of oil. However, two factors oppose its accumulation in commercial quantities. First, it is too shallow and second, the Cretaceous sands and sandstones have been penetrated by numerous wells which show that the formation is filled with fresh water under a sufficient head to bring it to or nearly to the surface.

There are no secondary diastrophic structures that might have trapped oil in commercial quantities. The "structure" at No. 1 fee, SE section 2-126n-47w, Walls Township, Traverse County, is a beach ridge of Glacial Lake Agassiz. Acreage has been leased on similar structures (beaches and moraines) to the east of Whiterock, S. Dak., and in Parnell Township south of Wheaton.

All subsurface relations in western Minnesota indicate that the possibilities for commercial oil or gas are exceedingly remote.

Kansas-Oklahoma Allowables

An allowable production of 633,600 bbls. daily during September is recommended for Oklahoma by the Bureau of Mines, an increase of 200 bbls. over August. The Oklahoma market demand hearing will be held at Oklahoma City August 27.

The Kansas allowable for September was set at 200,900 bbls. daily in the bureau's recommendations, an increase of 400 bbls. over August.

Crude Oil Price Change

Effective August 14 Sun Oil Co. reduced postings from 2 to 12 cents in Vinton, Hackberry, Cotton Lake, South Cotton Lake, West Beaumont and Nome fields for oil 35 degrees and above. The new schedule ends at 34 degrees with top price of $1.29 unchanged. The old schedule extended to 40 and above at $1.41.

*Meinzer, O. E., Geology and Underground Water Resources of Southern Minnesota. U. S. G. S. Water Supply Paper No. 256, 1911. Allison, Ira S., Geology and Water Resources of Northwestern Minnesota. Minnesota Geol. Survey Bull. No. 22, 1932.

The OIL AND GAS JOURNAL

PRODUCING REFINING NATURAL GASOLINE PIPE LINE

Published weekly by The Petroleum Publishing Company at Tulsa, Oklahoma

Seasonal Correction

Some of the producers of crude in Oklahoma are talking of requesting the State Corporation Commission to reduce their allowable for September. They have crude going to storage for which they have no outlet at this time. They see there is only one remedy—to cut back production to actual requirements and keep the surplus oil in the ground where it belongs.

This voluntary offer is commended as an example for producers elsewhere if the industry is to be brought back to a healthy condition, now being threatened by excess crude. Already Kansas and Lisbon producers have had their runs cut.

As shown by the recent monthly reports of the Bureau of Mines about 3 per cent of the national production so far this year has been going to storage. While some buyers were anxious to add to their aboveground inventories, others have increased stocks all they care to and unless something is done to curtail operations more in line with current demand a top-heavy situation is certain to develop which will ultimately have a reaction on the markets.

No one state, no one group of producers or buyers can work out a solution of this problem. It is a national problem. Because a particular area is not increasing its stocks is not prima facie evidence that it is not overproducing. It may be taking normal markets away from other states or companies who are thus forced to store part of their current production.

It is well to keep in mind again that problems in the petroleum industry are general and national in scope and seldom can be solved by local remedies.

A particular area on the Gulf Coast or in California may increase its production for a period over 20,000 barrels daily and get away with it, but it can only find outlets for it by taking markets away from some other state.

The actual results of this policy may be manifested in the Mid-Continent or the Middle West where 20,000 barrels of crude would back up in the form of additions to crude or refined storage.

We are now in a period of peak production but anybody knows that we cannot afford to maintain the peak output of the past two weeks the rest of the year.

Producers in some of the states have indicated they understand this situation and are willing to do their share in any curtailment program which is found necessary. Failure of any group to do its part will seriously threaten the continuance of good times in the oil business.

No producers in any one state or in any particular area can assume the entire burden of making this seasonal correction which is necessary. Because a state or an area is carrying on its operations without adding to storage does not mean it has its house in order. It may simply be trying to hog the market and let others hold the sack. There has been some evidence of that during the past few months.

There is less reason now than ever for any major setback in the oil business. There never has been a bigger nor a faster growing demand. There is no serious threat on the supply side if everybody will unite in making the minor contribution needed to balance the seasonal change in demand through the fall and winter months. But immediate concerted action is essential.

Use of Submarines Suggested to Seek Structures in Gulf

By WILLIAM GAMMON

Lieutenant-Commander G. C. Mattison, in charge of the New Orleans office of the U. S. Coast and Geodetic Survey, confers with Dr. William Bowie about the practicability of a submarine gravity survey off the Texas and Louisiana coast

The proposal that the petroleum industry cooperate with the government in making an extensive submarine survey for oil structures off the Texas and Louisiana coast has been proposed in Washington, D. C., by Dr. William Bowie, former chief of the Division of Geodesy of the United States Coast and Geodetic Survey and one of the foremost scientists in his field.

"The work could be done at virtually no cost," Dr. Bowie told the writer. "The submarines are already manned with officers and crews; the only additional cost to the navy would be that of fuel. Of course, there would be a small expense involved in the travel and living of two or three scientists who should go with the submarine to make observations."

This is not a crack-pot scheme. On the contrary, Dr. Bowie's work has won international recognition; foreign nations and universities have honored him for his achievements.

Pointing out there is no federal appropriation for carrying on the work, Dr. Bowie suggested a means of making the exploration possible.

"I feel confident," he said, "that the petroleum industry, which ultimately stands to profit from the findings of such exploration, would feel so interested in having the survey made along the Gulf Coast that officials of the petroleum companies or the American Petroleum Institute would be willing to allot several thousand dollars for covering the expenses of fuel and scientific staff."

"But why is it necessary to use a submarine?" Dr. Bowie was asked.

His answer was not direct. He explained first that the coastal plains of Texas and Louisiana are of utmost importance to the oil industry. Then he pointed out that should the waters of the oceans recede, a large stretch of new land would be created along the Gulf Coast. That new land, he said, would greatly extend existing fields.

"If the bottom of the Gulf should appear as land," he continued, "then geodetic and geophysical investigations could be made that would indicate the presence or absence of salt domes, anticlines and synclines: geological features that are so important in locating wells.

"But we do not have to wait for the waters to recede. We have a method now for determining much regarding subsurface structure. This method is that of weighing the earth at any given point, and so determining the values of gravity or the intensity of the earth's attraction."

Did you ever move a grandfather's clock to a new town, or to some house far removed from the old, only to find the pendulum had to be adjusted to make the clock keep correct time in its new location?

If you have, then you will appreciate how the earth's attraction varies from place to place according to the elevation above sea level and to latitude, and finally, according to whether or not there is extra heavy or extra light rock near the surface where the pendulum swings.

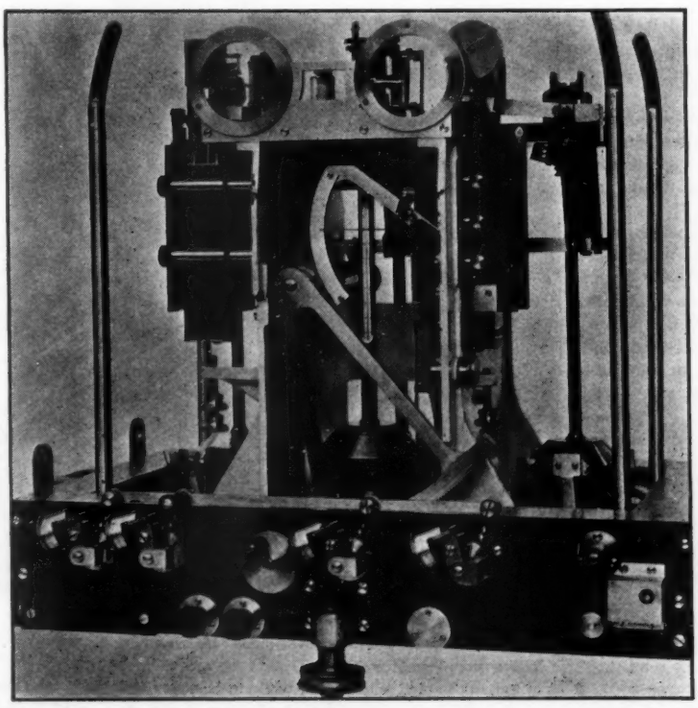
That is just what the scientist does when he weighs the earth. He uses a special pendulum, swung on jewels and so arranged its swing can be timed with extreme accuracy.

So delicate is this apparatus it records the slightest variation in the pull of gravity, which changes normally about one part in a million for each 10-foot change in elevation or for a mile change in latitude.

Now it becomes evident why the apparatus could not be used at sea: the motion of the water would make the pendulum useless. Thus for a long time the problem of making gravity surveys at sea was all but hopeless. Almost as hopeless was the making of gravity surveys in Holland. Pendulum readings were disturbed by the continual buffeting of the North Sea on the dykes.

Dr. F. A. Vening Meinesz, lamenting the inaccuracy of his pendulum, started seeking an "ideal" pendulum, one that would not respond to slight tremors of the instable land but would always give a true reading.

He hung two jeweled pendulums in an instrument so that when one was swinging to the right, the other was swinging to the left. If the instrument was tilted slightly, so that the swing of one pendulum was increased, the swing of the other was correspondingly decreased. Compounding the readings, he derived a hypothetical or ideal pendulum that was unaffected by slight jars and earth tremors. It was satisfactory on land.



The heart of the Meinesz apparatus. Three of the five pendulums can be seen in the photograph

Then he tried it on a boat, but the pitch of the vessel prevented his obtaining good records. With the cooperation of the Netherlands navy he took the apparatus down in a submarine. At about 70 feet depth he found the water was still enough to obtain good readings.

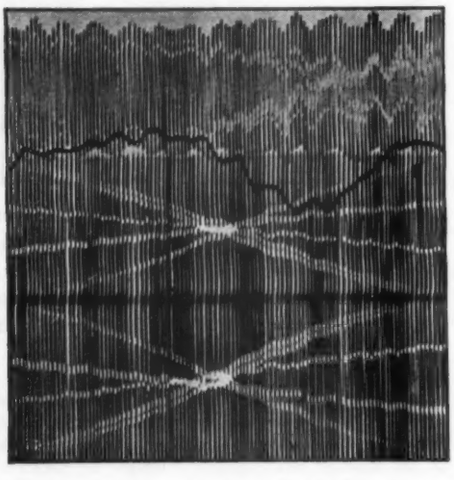
But here another obstacle intruded: a submarine cannot remain motionless when submerged. It must rise or sink unless kept moving. Dr. Meinesz found a way to correct his results, thus eliminating the error caused by the forward acceleration of the vessel.

In the perfected instrument there are five pendulums. Three swing in a vertical plane, and are fitted with mirrors and prisms which pick up a beam of light and transmit it to a moving film. From the record on the film two ideal pendulums are derived. The two additional pendulums, similarly rigged with mirrors, record deviations from the normal, such as slight tilting of the submarine, and

enable the observer to compute any factor of error and so reconcile the gravity findings.

The whole apparatus is enclosed in a case mounted in a cradle and swung from gimbals like a ship's compass, the gimbals resting on a frame that is made fast to the submarine.

Observations are made during a period of about 30 minutes, while the submarine is held at an even depth. Special clocks are so rigged that time is recorded on the same film with the pendulum movements. So accurate is the new clock developed for this work in the Bell Telephone Co. laboratories that it was off only .36 of a second after 40



Section of record taken in Mediterranean

days of continuous use in experiments in the Carribbean earlier this year.

"The earth has a crust, and the crust floats," said Dr. Bowie in explaining the operation of the apparatus. "By the most exact measurements we have found this crust extends about 60 miles below sea level. It rests on rocks beneath as ice rests on water, or as logs rest on a mud flat. Do not think this sub-crustal material is soft like putty, for it is not. It is hard and strong, but when a force acts on it for hundreds or thousands of years the sub-crustal material distorts and yields without breaking. It adjusts itself to the changing of loads by rains and rivers, and therefore the crust resting on it may be said to float.

"If the crust could be cut up by vertical planes into blocks having bases about 100 miles square, each block would weigh just about as much as any other block; the difference in weight would be only a small fraction of 1 per cent.

"The tall blocks which are under the mountains have light materials and the short blocks under the ocean have very heavy materials.

"The density of the materials has a very definite relation to elevation above sea level. The petroleum geologist is primarily interested in discovering domes and anticlines which, in general, have densities different from the surrounding material.

"It is well known that gas and oil are found on top or sides of anticlines or domes and that synclines are likely to yield artesian water.

"The submarine survey proposed for the Gulf Coast area would seek to locate gravity stations off the Texas and Louisiana shorelines. If, in extending this series of observations, positive anomalies are found in the midst of values close to zero, then it would be reasonable to suspect the presence of some heavy dense material close to the surface. From such a series of gravity readings the general contour of geological structures could be plotted on a chart for the guidance of well-drillers."

Dr. Bowie pointed out that the coastal waters of Texas and Louisiana generally are shallow, with a gently sloping floor.

The Coast and Geodetic Survey, now engaged in charting the sea approaches to Galveston, is reported to have located a number of domal hills lifting from the floor of the Gulf which Francis P. Shepard believes to be oil domes.

OBITUARIES

FRED D. ROSS, 51, widely known pipe line contractor, died in Bradford, Pa., August 12.

BENJAMIN PORTER BROWN, 70, of Rixford, Pa., producer in the Bradford field, died at Bradford hospital recently.

RUSSELL S. MEEKER, 65, former vice president of the Derby Oil Co., died at Wichita, Kans., last week. He organized the Great Plains Petroleum Co., later purchased by the Derby company.

FRED READ, of Big Spring, West Texas, drilling contractor, was killed instantly, crushed by a section of 10-inch pipe which fell from a rack, in the South Penn field, southwest of Odessa.

JAMES L. FLEMING, 81, a retired employe of Sinclair Prairie Oil Co., died August 12 at Albany, Tex. He had been active in the oil business since 1874 when he got his first job at Shamburg, Pa., following the development through Ohio, Indiana and Illinois, to Oklahoma in 1907, and later to California, returning during the Cushing excitement.

JOHN M. ALDEN, supervisor of oil and gas operations, United States Geological Survey, died in Tulsa August 16. Mr. Alden had been in charge of the Mid-Continent district office of the Geological Survey since 1930 when he moved to Muskogee, Okla., from Taft, Calif., where

JOHN M. ALDEN

he had served as deputy supervisor for six years. In 1932 the supervisor's office was moved to Tulsa where Mr. Alden has made his home ever since. He was born in Monroeston, Pa., May 10, 1888, and received his technical training in civil engineering while in business with his father. He was later resident engineer during the construction of the Coal and Coke Railroad in West Virginia. For 11 years he was civil and natural gas engineer for Hope Natural Gas Co. at Clarksburg, W. Va., and with the Standard Oil Company (N. J.) He entered the government service in Denver, Colo., in 1921.

R. R. McGUIRE, general superintendent of the Honolulu Oil Co. of San Francisco, died August 8 at his Santa Barbara home of a heart attack. He leaves his widow, Mrs. Agnes McGuire, who was at his side when he died; a daughter, Mrs. Frances Grogg of Bakersfield, and a brother, Henry McGuire of Los Angeles.

JOHN COLT BRECKENRIDGE, 57, for 40 years identified with the oil industry, died recently at the John Sealy Hospital, Galveston, Tex. He was active in pipe line construction and field operations of the Gulf Oil Corp. and American Petroleum Co. in South Texas. At the time of his death he was production superintendent of Cascade Refining Co. of Overton, Tex.

ALEXANDER G. McKENNA, 72, chairman of the board of Pomona Pump Co., Pomona, Calif., died July 29, at a Pasadena hospital. Death followed a seven weeks' illness. He was born in Allegheny, Pa., and had been engaged in metal manufacture since he was 15, starting under his father in the A. & T. McKenna Co. plant near Philadelphia. He had been associated with the Homestead and Edgar Thomson steel plants as a laboratory worker and metallurgical superintendent; Firth-Stirling Steel Co., and Washington Steel and Ordinance Co., all of Pittsburgh, Pa.; Vanadium Alloy Steel Co., Latrobe, Pa., and Latrobe Tool Co.

COLLECTIVE BARGAINING

(Continued from Page 21)

States industry. The wage provisions are essentially unchanged, for the Humble policy has been such for many years.

Essentially the same type of agreement is now in effect at the other Humble plants, having been ratified by the company and the individual federation councils and members.

Through an organization patterned closely to the Humble employes', the Pan American Refining Corp. workers at the Texas City refinery are also provided with their own representation for collective bargaining. The Pan American Workers Alliance, however, has not taken up with the company any specified agreement. The alliance, on the other hand, will be utilized as the means to arrive at agreements concerning any labor policies at such time a change is desired. Pan American workers, like Humble men, may submit their issues to the employes representative group, and may carry matters as far as the National Labor Relations Board if not satisfactorily settled in lower hearings.

Negotiations between workers' representatives and employers in the framing of these agreements have been characterized by their harmony. All indications point to a continued success of this form of labor representation, and to more widespread acceptance of the movement throughout the oil industry.

Lisbon Field Extended 3 Miles

SHREVEPORT, La., Aug. 17.—The Lisbon field in Claiborne Parish was extended 3 miles southwest when Shreveport Oil Corp. (J. R. Bevill and others) No. 1 Edwards, in section 16-20-5, began flowing steadily about 100 bbls. hourly from 18 feet of saturated Pettit lime, total depth 5,398 feet.

Motor Truck Show

The fourth annual National Motor Truck Show will be held at Newark, N. J., November 6-12. Clayton Farris, president, Trucktor Corp., has been elected vice president and general manager.

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Mechanics of Water-Flooding; of the Practice in Bradford

John F. Carll, geologist of the Second Geological Survey of Pennsylvania in charge of the survey of the oil regions, was the first to call attention to the possibilities of water-flooding to increase the recovery of oil from oil sands. In a report published in 1880, he makes the following statement:[1]

"The flooding of an oil district is generally viewed as a great calamity, yet it may be questioned whether a larger amount of oil cannot be drawn from the rocks in that way than by any other, for it is certain that all the oil cannot be drawn from the reservoir without the admission of something to take its place.

"If one company owned all the wells drawing upon a pool, and had accurate records of the depths and characteristics of the oil-producing stratum in each well, it is quite possible that some system might be devised by which water could be let down through certain shafts, and the oil forced toward certain other shafts, where pumps were kept in motion, and thus the rocks be completely voided of oil and left full of water."

In the Bradford district, the discovery that by introducing water into one well, the production of surrounding wells could be greatly increased was probably made accidentally. After the flush production of the eighties, many wells were abandoned. In some wells the casing was pulled without properly plugging them and in others the casing corroded and admitted fresh water from shallow horizons to the sand. In certain areas where water had thus accidentally gotten access to the sand, an increase in production in adjacent wells occurred.

Just when and on what property or properties this discovery was first made is not definitely known. One of the earliest floods is reported to have started 2 miles southeast of Rew in the Cole Creek district, and another 1 mile northeast of Aiken. In both these areas so-called "loose streaks" are present in the sand which would make the effects of water-flooding more quickly noticeable. As soon as the cause of this increase was understood, water-flooding began to be practiced secretly by some of the operators.

Intentional water-flooding was probably practiced on a small scale as far back as the early nineties. For a long time floods were started simply by shooting, cutting or pulling the casing in an oil well which was no longer profitable to operate and letting the water in on the producing sand. It was found that in many instances neighboring wells were benefited by the resulting water-drive. Additional wells were usually drilled around the area of advancing water, as the old wells were spaced too far apart for efficient flooding. Later it was discovered that much better results could be obtained by tubing the water-intake wells, as otherwise they soon became filled with silt and cavings from the walls to a level above that of the sand, thereby preventing access of the water to the sand. This method of applying the water-drive came to be known as the "circle" type of flood.

According to the older operators in the district, it was not until about 1907 that the effects of flooding became appreciably noticeable in the annual output of the district. For a long time many of the operators did not approve of introducing water into the sand and most of the larger companies opposed it. Those who engaged in the practice did so more or less secretly as the Pennsylvania law required that all abandoned wells and dry holes be plugged in such a manner as to prevent water entering the oil and gas sands. This was construed as prohibiting flooding.

In 1921 the Pennsylvania legislature passed a special act legalizing the practice when applied to the Bradford and certain other specifically named sands.[2] Water-flooding was greatly extended thereafter and the methods of applying the water-drive rapidly improved. The old "circle" flood, as generally developed in the Bradford field, had always been a more or less haphazard operation. Realizing this, the Forest Oil Co. in 1922 started what came to be known as the "line" type of flood. This consisted of two rows of oil wells staggered on both sides of an equally spaced line of water-intake wells extending across a property. In this type of flood, the wells in the rows were spaced from 200 to 220 feet apart and the rows 100 to 130 feet. When a row of oil wells had about reached its economic limit of production, which usually happened within two or three years, another row was drilled on the outside of it with the wells again in staggered position. The former oil wells were then converted into water intakes. The "line" flood, with various modifications to suit individual property conditions, was generally used throughout the Bradford field until, in 1928, it in turn was superseded by the still more intensive method, called the "five-spot" on account of the resemblance of the pattern to the five spots on dice, which is now employed on practically all new development work.

This is the third of the series of articles on secondary recovery in the Bradford field by Dr. C. R. Fettke, professor of geology at the Carnegie Institute of Technology, Pittsburgh, Pa.

The first on "Physical Characteristics of the Bradford Third Sand and Relation to Occurrence of Oil" was published in The Oil and Gas Journal of August 5; the second on "Subsurface Waters of the Bradford Field" in the issue of August 12. The series will continue with "Relation of Production of Oil by Water-Flooding to Physical Characteristics of Sand," and "Production, Reserves, and Future Life of the Bradford Field."

In the "five-spot" method, the whole tract that is to be developed is laid out in a pattern of squares. Water-intake wells are placed at the corners of the squares and producing wells at their centers. The first "five-spot" operation in the Bradford field was attempted by the Associated Producers Co. on a property in the southern part of the field as early as 1924. Frank Haskell proposed the idea. Unfortunately, the water-intake wells were spaced 500 feet apart. This was too far to give any appreciable results, as a core taken in the area since has shown that the sand is fairly tight and, therefore, requires much closer spacing. In cleaning out the water-intake wells later to find out what was wrong, it was also discovered that they had not been tubed properly and that silt had accumulated in the lower portion, effectually sealing off the sand to the entrance of water. It was, therefore, not until late in 1927 and early in 1928, when the "five-spot" development undertaken by Arthur E. Yahn of Olean on the Kuno-Kuhn property near the head of Oil Valley in the northeastern part of the field, commenced to show results, that the possibilities of the method were demonstrated. Since that time its use has spread rapidly.

A further development associated with the introduction of the "five-spot" method of flooding has been the application of additional hydraulic pressure to that of the hydrostatic head of the column of water in the intake well. This is accomplished by introducing the water under pressure at the top of the well by means of pumps. This had been tried in 1925 and 1926 in both the Richburg and Bradford pools with rather promising results, but the old-style flooding methods were not particularly well suited to its use and these experiments, therefore, did not attract much attention until 1928 when John Messer of Bolivar, N. Y., realizing the ideal conditions that the "five-spot" flood afforded for the application of additional pressure, tried it on a property in the Richburg pool that the Messer Oil Co. was then developing. The results obtained were so satisfactory that the introduction of subsurface water into intake wells has now become obsolete as far as new development work is concerned. The wells are tubed to take water from the surface only and usually in such a manner that 400- to 1,200-pound pressures, and in some instances more, per square inch at the top of the well can be applied. This type of flooding has come to be known as the "pressure flood."

One of the great advantages of the "five-spot" method is that it permits a much more rapid return of the capital invested in the exploitation of a particular tract than did the "circle" or "line" flood. In view of the high cost of acreage in the Bradford pool in recent years and the cost of drilling the great number of closely spaced wells required for water-flooding operations, this is an important factor. While the method calls for a larger immediate investment, the total investment is smaller. Drilling all the wells on a particular tract at one time results in an appreciable saving in cost per well. Installation of powers, rod lines, pipe lines, etc., is also considerably simplified. This work has to be done only once for the whole tract, but with old-style methods changes had to be made

[1] John F. Carll. The Geology of the Oil Regions of Warren, Venango, Clarion, and Butler Counties, Report III, Second Geological Survey of Pennsylvania, page 263. 1880.

[2] An act to regulate the drilling, operating, and abandoning of oil and gas wells, and providing a penalty for violation of this act. Approved May 17, 1921. Laws of the General Assembly of the Commonwealth of Pennsylvania passed at the Session of 1921, pages 912-915.

Evolution

By CHARLES R. FETTKE
Professor of Geology, Carnegie Institute of Technology

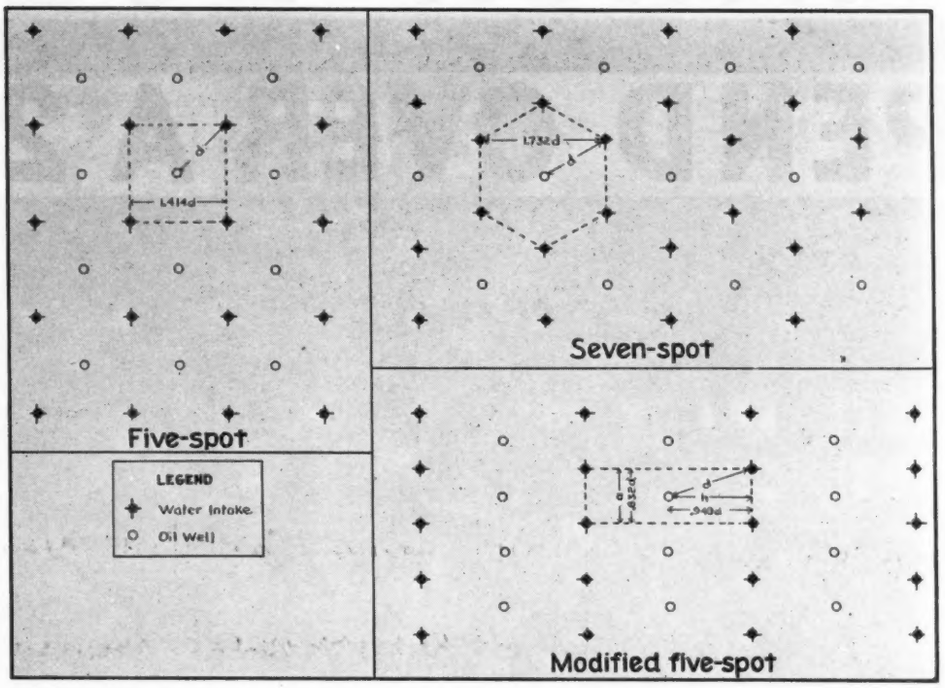


Figure 2

as the flood advanced. Also, in the "circle" and "line" floods, with the exception of the original intake wells, all the wells subsequently drilled had to be tubed first to pump oil and later to take water, which meant an additional expense. There is also a large saving in operating costs, in that a tract is depleted much sooner.

The "five-spot" method has been adopted so recently that very few tracts on which it has been used have reached the economic limit of production. Many "five-spot" floods, however, are sufficiently far advanced to show a total yield per acre at least as great as has been obtained on adjacent or nearby tracts by the old methods, and in most instances considerably greater. In both the "circle" and "line" floods, it frequently became necessary, or at least was deemed advisable in order to keep up production, to drill new wells and let the water into wells that were not completely watered out, in order not to delay the advance of the flood. While some of the remaining oil was recovered later, perhaps, in the next row of wells, a large percentage undoubtedly was trapped and lost. This procedure is not necessary in the "five-spot." The wells can be pumped until the oil no longer pays for its recovery.

It was discovered early that many old wells did not give the results obtained from new ones, either when used as producers or as intakes; the reason undoubtedly being that as the oil approaches a producing well, due to release of pressure, paraffin tends to separate out and partly close the pores of the sand for a short distance back from the walls of the well. It is doubtful, therefore, whether wells that have been used as oil producers for three or four years make quite as satisfactory water intakes as wells expressly drilled for that purpose. In the "five-spot" flood, all the water intakes are new wells.

In practically all new development work, arrangements are made to introduce the water at the top of the well and, in most instances, the wells are tubed in such a manner that pressure in addition to that of the hydrostatic head of the column in the well can be maintained. This has made it possible to determine by means of meters just how much water is entering the sand through each well. Formerly almost no data of this type were available and little was known about the behaviour of the intake wells. Each intake is now assured an adequate supply of water. Where properties are along the crests of sharp divides, it is now definitely known that, in many instances, the supply of subsurface water was inadequate during the dry months. Such properties, therefore, are now showing much better results where the "five-spot" method combined with pressure-flooding has been introduced. Pressure-flooding has also made it possible to flood areas of somewhat less permeable sand, which did not respond satisfactorily to former methods.

In fields of the Bradford type, where the potential energy of gas under pressure, including both gas dissolved in the oil and free gas, is practically the sole source of energy for expelling the oil from the sand, much oil remains in the sand after the pressure has become so depleted that the wells can no longer be operated at a profit. As Bartell and Miller have pointed out, such oil is held in the sand in two different ways.[3] Part of it is mechanically held within the capillary pore spaces and small openings between the sand grains. That part of the pore space not occupied by liquid is filled with gas which was released from solution in the oil by the reduction in pressure and in part may have been present originally. Oil held in this manner will flow through the openings in the sand when under pressure. Another part of the oil occurs as an adsorbed film surrounding individual sand grains and is held so firmly that it is not removed by pressure-flow methods but remains on the sand. Very little definite information is as yet available in regard to the exact thickness of such films and the percentage of the total oil remaining in the sand that is present in this condition. A small amount of connate water probably also remains in the sand, adhering perhaps in part to the walls of the pores and in part filling the smallest of the capillary openings.

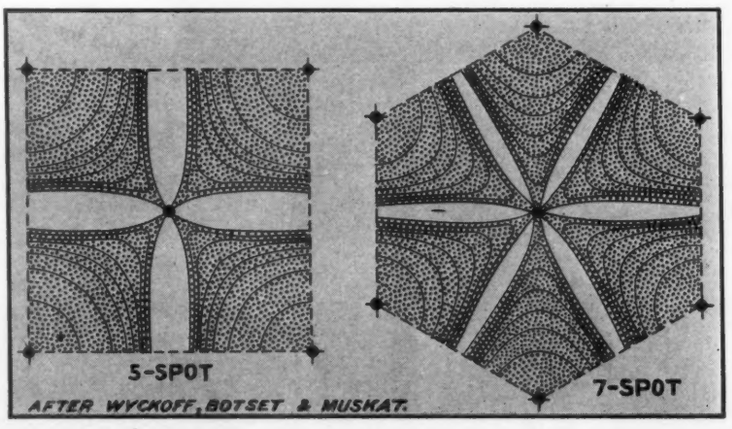


Figure 1

It is estimated that only about 16 per cent of the oil originally present in the Bradford pool was recovered by the ordinary production methods. This low recovery was due to several causes. The relatively low permeability of the sand in large parts of the field was an important factor. The lenticular nature of the individual sand layers that comprise the sand body was probably another. Little is known of the original reservoir pressure in the Bradford pool. In the nearby Ormsby pool, pressures as high as 570 pounds per square inch were reported in the Bradford Third sand and 750 pounds in the Kane, about 200 feet deeper, when that pool was opened. In as much as the Bradford pool was developed long before the forces by which oil is expelled from a reservoir were understood, it is needless to say that the reservoir energy of the pool was not utilized to the best advantage.

Water-flooding under favorable conditions removes much of the oil mechanically held in the pores and probably also some of the adsorbed oil. Quartz sand and the clay minerals have a greater affinity for water than for oil.[4] The greater adhesion tension of water as compared to oil against silica makes a good driving medium. Water has a tendency to replace oil in the small openings and force the oil into the larger ones. This may even result in water by-passing the oil. The water adheres primarily to the silica surfaces and the oil is left to occupy a space in the water tube or capillary. The oil adjusts itself to the large openings and is not easily dislodged, while the water moves around it until the rate of flow is increased to the point that the friction of the water against the oil surface exceeds the resisting

(Continued on Page 36)

[3]F. E. Bartell and F. L. Miller. Degree of Wetting of Silica by Crude Petroleum Oils, Industrial and Engineering Chemistry, Vol. 20, page 738, 1928.

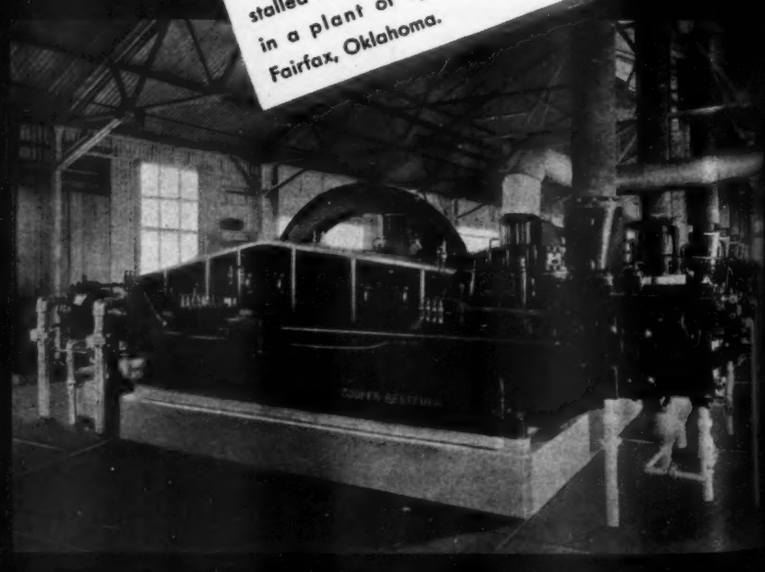
[4]F. E. Bartell and F. L. Miller, Degree of Wetting of Silica by Crude Petroleum Oils. Industrial and Engineering Chemistry, Vol. 20, page 741, 1928.
Allen D. Garrison. Selective Wetting of Reservoir Rocks and Its Relation to Oil Production. The Oil and Gas Journal, Vol. 34, page 36, August 15, 1935.

••WHICH WOULD YOU SPEND OVER A 20-YEAR

Four Type-12, two-cycle, horizontal compressor units at Quinton Station of Oklahoma Natural Gas Corp. . . . 250 H. P. each at 200 r. p. m.

A Type-12 compressor unit installed for Lisbon Gasoline Company near Arp, Texas.

A Type-12 compressor unit installed for Carter Oil Company in a plant of Type 10's near Fairfax, Oklahoma.



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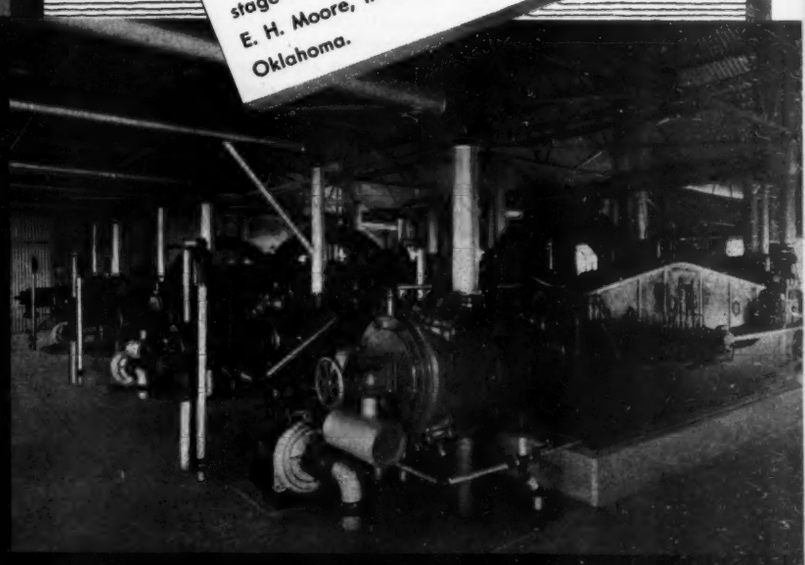
The Cooper-Bessemer Type-12 Compressor Units shown here are owned by concerns interested in lowest-cost compressor service over a period of years. Like many other users, they chose Type-12's for convenience, reliability and ECONOMY!

Four Type-12 compressor units installed during 1936 for Barnsdall Oil Company in Oklahoma City, Oklahoma.

A station of Type 12's, with three-stage compressors, installed for E. H. Moore, Inc., near Ahloso, Oklahoma.



25 West 43rd Street
New York City

Mills Building
Washington, D. C.

640 East 61st Street
Los Angeles, Calif.

201 East 1st Street
Tulsa, Oklahoma

631 Spring Street
Shreveport, La.

Magnolia Building
Dallas, Texas

Esperson Building
Houston, Texas

force and the oil is crowded through the smaller openings to the outlet.[5]

Under certain conditions, however, according to Nutting, quartz surfaces may have become activated so that oil coming in contact with them will not simply wet them but will be selectively adsorbed on them.[6] Once such a surface has become covered with oil, it no longer has a greater affinity for water than for oil, but prefers oil to water. Water does not readily replace oil clinging to such adsorbed layers.

Uren and Fahmy have discussed some of the factors that influence the recovery of petroleum by water-flooding as revealed by laboratory experiments with unconsolidated sands.[7] They found that capillarity is not a controlling factor in the process of water-flooding; that flooding efficiency decreases markedly as the viscosity of the oil increases; that oils having the lower surface tensions can be more effectively displaced from sands by flooding than those of higher surface tension; that temperature influences efficiency, primarily on account of its effect on the viscosity and surface tension of the oil; that the efficiency of flooding increases as the interfacial tension of the oil against the flooding medium decreases; and that a slow rate of advance of the flooding medium through the oil sand results in greater recovery of oil than is possible by rapid displacement. Working with unconsolidated sands, they found that water-flooding was more effective in coarse-grained sands and in sands of high porosity than in fine-grained sands or sands of low porosity. This is contrary to actual operating experience in the Bradford and other eastern fields where water-flooding has been tried. The reason probably is that in the laboratory experiments, as conducted, much oil floated upward on the column of water as it rose vertically through the highly porous unconsolidated sand. Under actual field conditions, movement is largely a horizontal one and by-passing owing to differences in permeabilities of various layers of sand becomes the outstanding factor.

Laboratory experiments show that the flow of liquids through porous media follows Darcy's law which states that the velocity of flow is proportional to the pressure gradient provided the flow is viscous, not turbulent in nature. The very slow movement of the liquids in a water-flood is undoubtedly of the viscous type. In as much as Darcy's law is equivalent to the law of electrical conduction, Wyckoff, Botset and Muskat have made use of an electrolytic model to study pressure distribution and advance of the flood front, in which the motion of the ions in the potential field is the same as the motion of the fluid particles in a fluid-sand model.[8]

The model consisted of an electrolyte containing an ion indicator, such as phenolphthalein, held in a suitable porous medium to prevent excessive velocity of normal diffusion. The negative electrode in the model represented the input well and the positive terminal, the producing well. The advance of the hydroxyl ions from the negative to the positive electrode corresponds to the advancing fluid front. This advance of the hydroxyl ions is indicated by the color of the phenolphthalein indicator which is coloriess in acid and red in the presence of hydroxyl ions. Various stages in the advance of the flood front up to the time that it first reaches the output well for the "five-spot" and the "seven-spot" pattern are shown in Figure 1. It will be noted that during the early stages of the flood, the advance is circular and it is only during the later stages that a sharp cusp forms into the producing well. The models depict the flow through a sand of uniform thickness and uniform permeability throughout.

Three types of flood patterns are shown in Figure 2. The first or "five-spot" is the one most commonly used. Muskat and Wyckoff find that under ideal conditions this pattern gives an efficiency of 72.3 per cent; that is, this per cent of the area will have been flooded out by the time the water reaches the output well.[9]

This figure must not be taken too literally, however. It applies to ideal conditions. The Bradford Third sand, instead of being a single bed of uniform standstone, is usually a whole series of individual layers, each one of which may possess a different porosity, permeability, oil and gas content, etc. The flood front, therefore, will not reach the producing well at the same time for all the layers and hence the first appearance of water in actual field practice does not necessarily mean that 72.3 per cent of the entire volume of the sand body has been flooded out. By-passing of water along the more permeable layers may become so great that the economic limit of production will be reached long before 72.3 per cent of all the layers have been flooded out. Under particularly favorable conditions, on the other hand, it may be possible to operate the producing well beyond the 72.3 per cent stage. Lateral variations in the sand will also alter the ideal shape of the advancing flood. The above figure is of value for comparing patterns, which is its purpose. It must also be kept in mind that because 72.3 per cent of the sand has been flooded does not mean that 72.3 per cent of the oil in it has been recovered. Much of the oil may not be removable by water-flooding.

"Five-spot" pressure-floods in actual operation are spaced all the way from 215 to 320 feet on a side, making the distance between intake and producing wells 152 to 226 feet. In order to reduce development costs there has been a tendency in recent years to increase the distance between wells, but rarely has the distance between input wells been made greater than 320 feet.

The "seven-spot" pattern has been used but little. It is more difficult to adjust to the boundaries of a particular tract than the "five-spot." According to Muskat and Wyckoff, this pattern has an efficiency of 74 per cent, as compared to 72.3 per cent for the "five-spot." In order to have the same well-per-acre density with this pattern as with the "five-spot," it is necessary to make the distance between water-input and oil well 1.074 times as great as in the "five-spot." The relative production rate then becomes about 13 per cent less than of the "five-spot."

The modified form of "five-spot" shown in Figure 2, when the ratio of h to a is equal to 1.5 to 1, has an efficiency of 80 per cent. With a distance between water-input and oil well 1.291 times that of the "five-spot," in order to make the well-per-acre density the same, its relative production rate is about 12 per cent less than that of the "five-spot."[10] Some operators have modified the regular "five-spot" pattern by lengthening it in one direction and shortening it in the other in order to make it fit a particular tract, but as far as the writer knows, not to such an extent as to have the ratio h to a equal to 1.5 to 1.

One of the most difficult conditions found in parts of the Bradford pool is the occurrence of alternate layers of sand that differ greatly in permeability. One of the means of overcoming this condition, at least partly, in pressure-flooding is to delay drilling the oil wells after the water under pressure has had four to six months, or even longer, to enter the sand, the time depending on conditions shown by core analyses of the sand and the time normally required for the oil wells to reach a peak if drilled at the same time as the intake wells. At first the water tends to enter the more permeable layers rapidly, crowding the little globules of oil and bubbles of gas ahead of it as the volume of the gas shrinks. As the pressure builds up, part of the gas also goes into solution in the oil. Finally, since there is no outlet until the oil well is completed, such a pressure is built up ahead of the advancing flood of water that no further movement is possible. In the meantime, water also enters the less permeable layers, but at a slower rate, and by delaying the drilling of the oil wells a considerable advance in these layers also takes place, but, of course, because the openings are smaller, equilibrium is established and conditions become static with the front of the flood nearer the intake well. When the oil well finally is drilled, a bank of oil under pressure has already been built up ahead of the water and it commences to move toward the well.

If the oil well is completed and put on production when the water under pressure is applied to the intake well, the water travels through the more permeable layers comparatively rapidly, and when it reaches the oil well, with the resistance due to the presence of the gas bubbles overcome, the velocity depends on the pressure applied, as the flow of water through the sand thereafter probably closely follows the law of flow of water through capillary tubes; that is, the lineal velocity varies directly as the difference in pressure at the face of the sand in the intake and producing wells.

If the pressure at the face of the sand in the intake well is kept constant by supplying all the water that it will take at that pressure, the water eventually will pass through the less permeable layers also, provided the pressure is great enough to cause a perceptible movement from the intake to the producing well through such layers. However, enormous quantities of water that are by-passing through the more permeable layers must be handled in order to recover relatively small volumes of oil from the less permeable layers. In delayed drilling most of the work necessary to move oil from the intake toward the producing well is accomplished before this by-passing occurs; hence more oil is recovered with a smaller volume of water. In carrying out a delayed drilling program, old wells must be plugged off at top of the sand.

Delayed drilling is being practiced by several operators in the Bradford district. The oil wells are drilled anywhere from 6 to 18 months after the water has been turned in on the sand, this being about the time required on the tracts for the producing wells to reach their peak in oil production when drilled at the same time as the intake wells. In the examples of this procedure that have come to the writer's attention, the oil production has been either equal to or greater than when the two sets of wells were drilled simultaneously. In some instances the water output to oil ratio for the entire period of production has been appreciably reduced.

By eliminating the early period of small production, a saving is made in interest charges and in pumping costs. Some operators have observed, however, that if the drilling of the oil wells is delayed too long, the wells yield a large volume of water before the expected quantity of oil has been obtained. This perhaps is due to the fact that the permeability of the sand varies horizontally as well as vertically and as a result the bank of oil that is built up ahead of the water does not develop symmetrically around the center of the pattern. By installing meters at each intake well and regulating the flow of water, this can perhaps be controlled to a certain extent. At best, however, delayed drilling affords only a partial solution of the by-passing problem.

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[5]Alex. W. McCoy and W. Ross Keyte. Present Interpretation of the Structural Theory for Oil and Gas Migration and Accumulation. Problems of Petroleum Geology, American Association of Petroleum Geologists, page 273, 1934.

[6]P. G. Nutting. Some Physical and Chemical Properties of Reservoir Rocks Bearing on the Accumulation and Discharge of Oil. Problems of Petroleum Geology, American Association of Petroleum Geologists, pages 830-832, 1934.

[7]L. C. Uren and E. H. Fahmy. Factors Influencing the Recovery of Petroleum and Unconsolidated Sands by Water-Flooding. Petroleum Development and Technology, 1927, Trans. A.I.M.E., Vol. 77, pages 318-332, 1928.

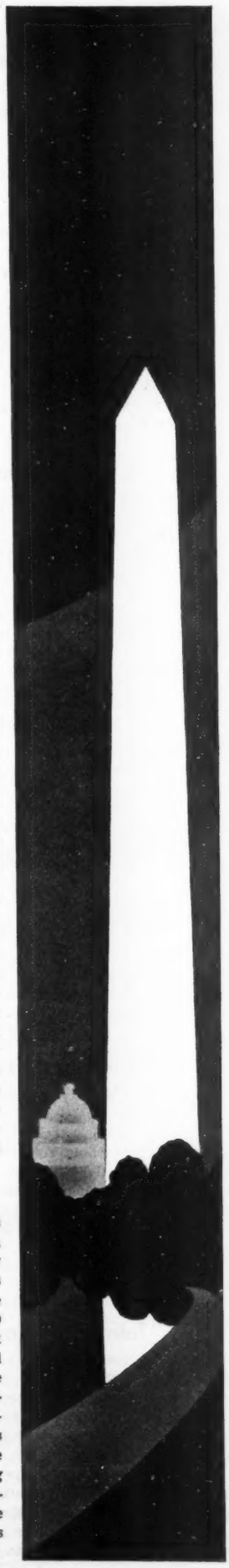
[8]R. D. Wyckoff, H. G. Botset and M. Muskat. The Mechanics of Porous Flow Applied to Water-Flooding Problems. Trans. A.I.M.E., Vol. 103, pages 219-240, 1933.

[9]M. Muskat and R. D. Wyckoff. A Theoretical Analysis of Water-Flooding Networks. Trans. A.I.M.E., Vol. 107, page 72, 1934.

[10]M. Muskat and R. D. Wyckoff, *idem*.

Gas Regulation Measure Is Blocked in Senate

By HENRY D. RALPH



WASHINGTON, D. C., Aug. 16.—Passage of the Lea bill to place interstate gas pipe lines under control of the Federal Power Commission was blocked in the senate Saturday by Senator Austin (R., Vt.).

The measure was on the verge of passing by general consent without debate when Senator Austin made his objections.

"The measure seems entirely too important to me to be passed without general debate," he said.

"I may be wrong, but it seems to me that one of its provisions would possibly give the government power to regulate gas production in the state. I don't think the government should tell a state how it should run its industries."

The Lea bill passed the house on July 1 and had been favorably reported by the senate committee on interstate commerce without amendment. It was first proposed as a part of the controversial public utility holding company act of 1935, but which was later separated from that measure and in modified form was extensively considered by the house committee on interstate and foreign commerce in 1936. Further hearings were held by the house committee this spring at which very little opposition was expressed, and the bill passed the house without controversy. It was expected the senate would approve it early and without amendment, although earlier in the session Senator Prentiss Brown of Michigan had introduced a more drastic gas regulation bill, which would prohibit banking control over interstate gas pipe lines, and give the Federal Power Commission greater power to investigate the value of a gas company's holdings of gas fields and reserves.

Scope of Bill

In reporting the bill, the committee described its scope as follows:

"If enacted, the present bill would for the first time provide for the regulation of natural gas companies transporting and selling natural gas in interstate commerce. It confers jurisdiction upon the Federal Power Commission over the transportation of natural gas in interstate commerce, and the sale in interstate commerce of natural gas for resale for ultimate public consumption for domestic, commercial, industrial, or any other use. The states have, of course, for many years regulated sales of natural gas to consumers in intrastate transactions. The states have also been able to regulate sales to consumers even though such sales are in interstate commerce, such sales being considered local in character and in the absence of congressional prohibition subject to state regulation. There is no intention in enacting the present legislation to disturb the states in their exercise of such jurisdiction. However, in the case of sales for resale, or so-called wholesale sales in interstate commerce (for example, sales by producing companies to distributing companies) the legal situation is different. Such transactions have been considered to be not local in character, and, even in the absence of congressional action, not subject to state regulation. The basic purpose of the present legislation is to occupy this field in which the Supreme Court has held that the states may not act.

"The bill provides for regulation of the exportation and importation of natural gas and authorizes the commission to ascertain the cost of property used in rendering service; to direct extension or improvement of transportation facilities, and require the interconnection of facilities; to regulate the abandonment of service; to fix rates and charges for natural gas sold for resale for ultimate public consumption; to investigate compacts between the states; to compile information relative to the effect and operation of any compact between the states; and to make investigations and report to congress respecting the natural gas industry. The bill takes no authority from state commissions, and is so drawn as to complement and in no manner usurp state regulatory authority, and contains provisions for cooperative action with state regulatory bodies."

Helium Control

A bill making the production and sale of helium gas a government monopoly has been passed by the senate and sent to the house where a somewhat similar bill has been pending for some time. The bill was first proposed as a measure to permit the exportation of small quantities of helium for medicinal purposes in the treatment of respiratory diseases, but after the explosion of the German dirigible Hindenburg the bill was rewritten to permit the exportation of commercial quantities of helium for various purposes, including the inflation of airships. The bill makes the helium business a monopoly in the Bureau of Mines, which would have authority to acquire by purchase, lease, or condemnation lands or interests or options necessary for the production or conservation of helium, to make necessary contracts for the acquisition or processing of helium-bearing gas, to construct or acquire plants, pipe lines, or equipment, and to acquire patent rights and conduct experiments for the production of helium. The bill reserves ownership of all helium gas on the public domain but provides that the bureau may permit other use of the land or of gas produced with it under arrangements by which the helium is extracted. The bureau may produce helium for sale to the army and navy and to private purchasers within the United States under regulations to be approved by the president. No helium gas may be exported from the United States except under license from the secretary of state with the unanimous approval of the secretary of the interior and all members of the National Munitions Control Board, which is composed of the secretaries of state, war, navy, commerce, and the treasury. The bill contains safeguards against the accumulation of helium in quantities of military importance in any foreign country, but small quantities of helium which are not of military importance may be exported under license from the secretary of state without reference to the munitions board. The bill also provides for government purchase of the property of the single private producer of helium in the country, the Girdler Corp. of Louisville, Ky., which has helium properties in Kansas. Representative J. P. Thomas, New Jersey Republican, blocked house consideration of the bill for the second time Monday and asserted he would fight any attempt to pass it under a special rule.

Tax Loopholes

The possibility of serious hardship on oil royalty companies loomed in the tax loophole closing bill which administration leaders hope to whip through congress this week. Royalty companies are affected by the provision of the revenue laws relating to personal holding companies, which includes in the definition of such companies corporations which receive 80 per cent of their gross income from royalties and whose stock to the extent of not more than 50 per cent in value was owned by not more than five individuals during the last half of the taxable year. The joint committee on tax evasion and avoidance presented a long and complicated list of recommendations for imposing heavier taxes on personal holding companies of all kinds, and these recommendations were the basis of the bill drafted by the house ways and means committee. During the drafting of the bill, R. C. Fulbright, of Houston, Tex., representing 23 oil royalty companies, told the committee the application of these recommendations to mineral royalties corporations would amount to virtual death sentence.

Pipe Line Activity

Panhandle Eastern Crossing

BOONVILLE, Mo.—Drilling of the first of 2,000 holes in a rock formation in the Missouri River bed near here is being done by the Al Johnson Construction Co. of Minneapolis, in preparation for dynamiting a channel in which the loop for the Panhandle Eastern Pipe Line Co. will be placed four feet below the river bed. The drilling will take about three weeks, and an additional two weeks will be required before the pipe can be strung. The rock ledge extends approximately half the distance across the river which measures about 1,100 feet.

Each hole will be filled with a charge of about four pounds of dynamite. Although the barge equipment would permit the drilling of 20 holes simultaneously, from 5 to 10 holes are to be drilled at one time.

La Blanca Gas Line

HOUSTON, Tex.—Rio Grande Valley Gas Co., which serves 17 valley cities with gas, has completed a 9.5-mile welded line between the La Blanca field and its main gas distribution system near Donna. The line is a 6-inch extension which will take gas from discovery wells of two sands in the La Blanca field. The line has a maximum daily capacity of about 10,000,000 feet and will provide an additional and auxiliary supply to the company's main line.

Start Lodi Line

SHREVEPORT, La.—Southern Liberty Pipe Line Co., subsidiary of American Liberty Oil Co., has two crews clearing right of way for its 12-mile 6-inch pipe line to the Lodi extension sector of the Rodessa field, connecting with its present facilities in the Cass part of the pool. The company is also grading for a 10,000-bbl. storage tank in the Lodi area.

West Virginia Line Started

Godfrey L. Cabot Co., Inc., has begun a 40-mile line from near Sissonville, W. Va., to the Oak pumping station of the company near Grantsville on the Little Kanawha river.

Lisbon-Homer Project

SHREVEPORT, La.—Gulf Refining Co., which is providing the Lisbon oil field of Claiborne Parish with its only outlet, has announced it will not take more than 10,000 bbls. hereafter. Lisbon allowable is 12,000 bbls. daily, with new completions coming in rapidly. Lisbon operators have held several meetings in an effort to secure additional outlets. Among the number of plans studied is the construction of a line to Standard Oil Co. of Louisiana large storage and pipe line facilities at Homer, about 10 miles to the northwest.

Intangible Tax Test

AUSTIN, Texas.—Three pipe line companies have renewed their attack on the intangible tax law by obtaining restraining orders to prevent certification of 1937 values pending determination of litigation en route to the Supreme Court of the United States.

District Judge J. D. Moore granted temporary restraining orders returnable October 25 in favor of Texas, Humble and Texas Empire companies restraining the tax board from certifying assessments to the various counties through which the lines run. Final assessments likely will be completed by the tax board this week, showing a substantial reduction from the $96,000,000 preliminary valuations. Hearings on the restraining orders were dated for October 25 because of the possibility of a Supreme Court decision on constitutionality of the tax law and validity of the board's method of computing assessments by that date.

Mo.-Kan. Election

John R. Perry, Boston, Mass., G. R. Mellor, Montreal, Ont., and H. P. Child, Philadelphia, Pa., were elected directors of the Missouri-Kansas Pipe Line Co.

Pipe Line Contracts

Williams Bros. Corp., Tulsa, announces the following pipe line contracts. Manufacturers Light and Heat Co., Pittsburgh, Pa., have just placed contract for construction of 100 miles of 16- and 20-inch gas pipe line to run from Cedarville, W. Va., to tie into its main line of 16-inch in the Sand Hill district, Marshall County, W. Va. Ohio Fuel Gas Co. of Columbus, Ohio, has contracted for the reclaiming of 63 miles of 16-inch line from Marietta to Sugar Grove, Ohio. Republic Pipe Line Co. has contracted for 65 miles of 6-inch oil line from Corpus Christi to Benavides, Texas. Standard Oil Co. of Louisiana, Shreveport, La., has contracted for 141 miles of 6-, 8- and 10-inch line to run from Port Allen (Baton Rouge) to Roanoke and Jeanerette.

Standard Awards Prizes

CHICAGO.—Keeping the windshield clean is the most important service the gasoline dealer can render the motorist, in the opinion of car drivers from thirteen states who were awarded prizes in the "service survey" conducted recently by the Standard Oil Company of Indiana. The survey, which was made by thousands of motorists for a period of six weeks, to determine public preference in the matter of gasoline station service, revealed also that next to clean windshields, the man behind the wheel wants his tires and the oil in his crank case checked.

A total of $5,000 was awarded to the 122 motorists who submitted the best reports, and an equal sum was given to the Standard Oil dealers who assisted them in making the surveys. The first prize of $1,000 went to Samuel J. Hurst, Jr., of Kansas City, Mo., while an equal award was paid to George Shattuck, a Kansas City dealer, who assisted Hurst.

Natural Gas News

Oklahoma Carbon Plant

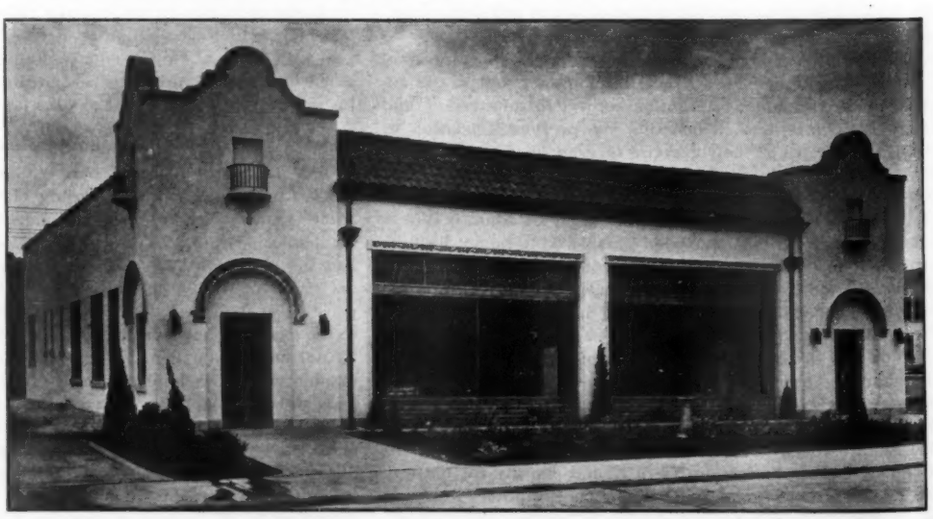
Permission to construct and operate a carbon black plant in Texas County, in the Oklahoma Panhandle, using up to 60,000,000 feet of gas daily, was granted Stanley Marsh, Jr., of Amarillo, Tex., by the Oklahoma State Corporation Commission. The order grants a 10-year permit. The order requires Marsh to purchase all natural gas produced and offered for sale in the vicinity or to make his purchases on a rated basis.

Texas Rate Reductions

AUSTIN, Tex.—Reduction of rates in six towns served by the Southwest Gas Co. has been ordered by the Railroad Commission. Cities affected are Cuero, Gonzales, Yoakum, Luling, Lockhart and Shiner.

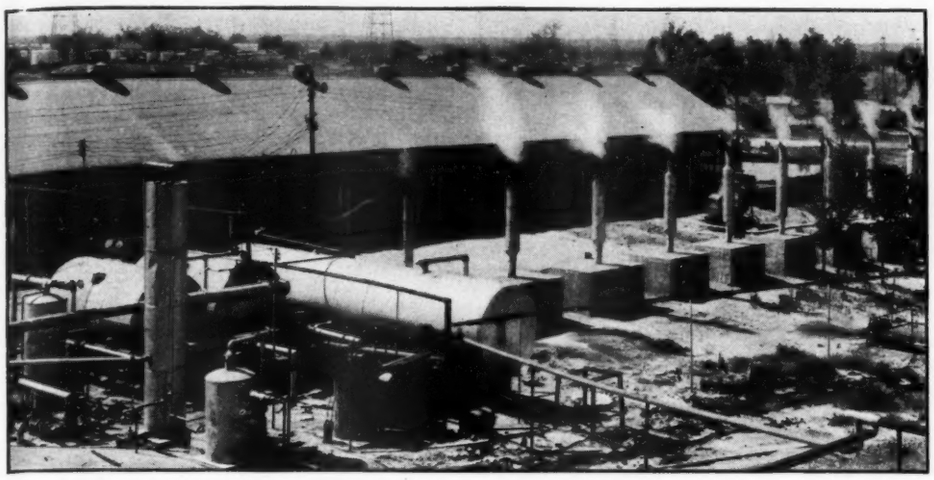
Charges per 1,000 feet under the new schedule effective at the next billing date are: Minimum bill, including 1,000 feet, $1.25; next 2,000 feet, 75 cents; next 7,000 feet, 60 cents; next 20,000 feet, 50 cents; next 45,000 feet, 40 cents, and in excess, 35 cents. The former rate was: First 3,000 feet, $1 per 1,000 feet; next 2,000 feet, 90 cents; next 5,000 feet, 85 cents; and all over 10,000 feet, 75 cents, with a $1.50 minimum bill.

On June 13, 1934, Cuero adopted an ordinance reducing the rate to a scale from 75 cents to 55 cents, with a $1.25 minimum. The commission ordered a refund to consumers in Cuero in the amount of the difference.



Many features make the new building of the Southwest Natural Gas Co. of Ada., Okla., outstanding. Year round air conditioning and flood lighting with natural gas are featured

Natural Gasoline



General American Oil Co.'s 4,000,000-foot capacity compression plant near Gladewater, East Texas field, where it recently carried out a complete reconditioning program, and added one compressor unit

New Plant for South Arkansas

SHREVEPORT, La.—Freeman W. Burford, president of East Texas Refining Co., and large leaseholder in the Arkansas extension of the Rodessa field, has announced that the company will build a natural gasoline plant with sufficient capacity to handle the gas production of all Miller County, Ark., wells on the Rodessa structure. The plant will be located on the A. A. Capps lease, section 11-20-28 in an area now containing four oil wells.

New Rodessa Plant

SHREVEPORT, La.—Phillips Petroleum Co. is rushing the construction of its 50,000,000 cubic foot absorption gasoline plant in the Lodi area of the Rodessa, Texas, field, where it is completing gathering and residue lines to the majority of oil producing properties of that area. Boilers have been set, foundations poured, overhead piping constructed, and some absorbing towers erected.

Production Higher in June

Daily average production of natural gasoline showed a slight increase in June, 1937, according to the monthly report prepared by the Bureau of Mines. The total production in June was about 5,000,000 gallons less than in May but the daily average of 5,417,000 gallons was about 14,000 gallons higher than in May and about 900,000 gallons above the average of June, 1936. The most notable increases in June were in the East Texas and Gulf districts of Texas, and in Louisiana. Production of the four largest fields was as follows: Kettleman Hills, 14,029,000 gallons; Panhandle, 15,967,000 gallons, East Texas, 17,177,000 gallons; and Oklahoma City, 12,166,000 gallons.

Monthly production of the various districts, in gallons, was as follows: Applachain, 4,626,000; Indiana, Michigan, and Kentucky, 867,000; Oklahoma, 39,197,000; Kansas, 4,141,000; Texas, 48,825,000; Louisiana, 8,564,000; Arkansas, 962,000; Rocky Mountain, 5,769,000; and California, 49,547,000. Production for the first six months of 1937 was 964,866,000 gallons as compared with 839,328,000 gallons in the like period of 1936.

Stocks of naturals at both refineries, and plants and terminals increased the total of 262,794,000 gallons on hand June 30 being about 11,000,000 gallons higher than stocks the first of the month and about 18,000,000 gallons higher than stocks of June 30, 1936. About two-thirds of the month's increase in stocks was in stocks held at refineries.

Shipments to jobbers and retailers and exports in June, 1937, totaled 30,492,000 gallons, or 8,316,000 gallons more than in May. Large shipments were made to Canada, England and Netherland West Indies. The average vapor pressure of all the major classes of shipments declined, the weighted average of all shipments in June being 19.06 pounds as compared with 19.37 pounds in May.

New Billings Field Plant

Phillips Petroleum Co. and Shell Petroleum Co. have announced plans for the construction of a natural gasoline plant in the Billings field, Noble County, Oklahoma. The plant, which will be operated by Phillips, will have a capacity of from 10,000 to 15,000 gallons of natural daily. It will be constructed on the companies' community leases and will be arranged so as to provide for future activity in repressuring operations and so future additions can be made.

Continental Oil Co. and Tide Water Associated Oil Co. have announced similar plans for another gasoline plant in that area.

To Enlarge Lucien Plant

The Lucien community block, made up of eight oil companies and operating the community tracts in the Lucien field of Noble County, Oklahoma, has announced its natural gasoline plant serving the area will be enlarged. New gas gathering and residue gas return lines will be laid. The enlarged plant will then be able to process more than 20,000,000 feet of gas a day and its production stepped up to around 40,000 gallons of natural daily.

The block is owned by Shell Petroleum Corp., Gulf Oil Corp., Sinclair Prairie Oil Co., Carter Oil Co., Sun Oil Co., L. H. Wentz, Phillips Petroleum Co. and Cities Service Oil Co.

Refinery Expansion

Refiners Hold Meeting

SHREVEPORT, La.—About 50 refinery men attended the monthly meeting of the Ark-La-Tex Division of the Western Petroleum Refiners Association in El Dorado, Ark., August 13. Mr. R. H. Pennebaker, lubrication engineer for Lion Oil Refining Co., read a paper entitled "Motor Oil Recommendations for Atmospheric Temperature Ranges." He dealt largely with motor oil recommendations for various temperature ranges and the changes in the physical properties of motor oils after use. An active and lengthy discussion of this general problem followed Mr. Pennebaker's address.

Reconstruct Damaged Stills

SHREVEPORT, La.—Atlas Pipe Line Co. has begun reconstruction work on two stills recently destroyed by fire at their Shreveport refinery. The plant has 11 stills. The cracking and polymerization units were not damaged.

Royalite Tank Farm

TURNER VALLEY, Alberta.—The Royalite Oil Co. is establishing a tank farm on the Sterling-Pacific lease, section 33-18-2w5, South Turner Valley, with a capacity of about 10,000 bbls. to handle crude from west flank producers.

Building New Plant

SHREVEPORT, La.—North Caddo Refining Co., with headquarters in Shreveport, La., has begun the construction of a new refinery about 2 miles northeast of Rodessa to replace the one which was destroyed by fire several weeks ago. Capacity of the destroyed plant was 500 barrels per day.

New Pure Oil Unit

MUSKOGEE, Okla.—The Pure Oil Co. has cleared ground at its refinery here preparatory to erecting a cracking unit. The new unit will combine ordinary cracking and partial reforming. Actual construction is expected to start in the near future and will be completed within five months. The construction work is under contract with the Trans-American Construction Co., a subsidiary of the Alco Products Co.

Stoddard Solvent Specification

WASHINGTON, D. C.—F. W. Reynolds, division of trade standards for the Bureau of Standards, has addressed the following letter to producers, distributors and users of Stoddard solvent:

"Under date of January 12, a Recommended Revision of the Commercial Standard for Stoddard Solvent, CS3-28, was circulated for written acceptance. On June 11, an amendment with reference to a 50 per cent point distillation requirement was circulated.

"Signed acceptances from a number of producers, distributors, and users estimated to represent a satisfactory majority have been received.

"We are pleased, therefore, in the absence of active opposition, to announce that the Commercial Standard, which will be identified as CS3-28, may be considered effective for new production from February 10, 1938."

Oil News from Foreign Lands

Mexican Shutdown Feared

It is possible that cessation of operations in Mexico may be forced on foreign petroleum producers, refiners and marketers, if the special investigating committee's report on ability of such companies to pay higher wages is embraced by President Lazaro Cardenas. This was the declaration of foreign corporations in Mexico City last week in formal protest to the Federal Labor Board against the special committee's report which recommended wage increases and social benefits which would increase operating expenses by $7,000,000 to $9,000,000 annually. In the cooperative statement by private companies handed to the Federal Labor Board, the government was left with the choice of compromising on the wage increase recommended by the special committee or having its most lucrative industry close down. The government leans heavily on the petroleum industry for financial support.

The special investigating committee was appointed nearly two months ago by President Cardenas to inspect books of the companies to determine their ability to pay higher wages demanded by the petroleum workers syndicate. Demands of the workers had precipitated a two weeks' strike which paralyzed automobile and rail travel and other industries dependent on a steady supply of oil for power. Workers agreed to return to work on the government's promise to base its findings in the matter of increased wages on ability of companies to pay.

In the statement handed the Federal Labor Board, the companies informed the government specifically that the increases in pay and the new pensions recommended by the official investigators would run to $18,000,000 annually instead of $7,000,000 stated by the government experts and that the total annual income of the various companies is but $6,300,000 instead of $21,000,000 stated by the investigators.

The companies explained that with expenditures exceeding income they would have no alternative but to cease operations.

Failure of Mexico's petroleum industry to maintain or progress beyond its position of 1921 was blamed by the companies' statement on increasing government restrictions imposed on the operators.

"The companies will be absolutely unable to continue operating in case they are obliged to establish the economic conditions counseled by the committee's report," the company declared.

Citing the restrictions placed on the drilling of wells by the government in 1925 and the fact that almost no new drilling contracts have been granted during the past year, the companies' statement claims the Mexican petroleum industry has been "obstructed." The statement adds that findings of the government experts tend to put it in a more precarious situation to such an extent it will make it impossible for the producing companies to continue.

Declaring it contains inaccurate figures, statements and conclusions throughout, the companies assert the government investigating committee's report is "so marked by aggressive passion," against the companies "that it goes far beyond the realm of labor conflict the commission was supposed to investigate."

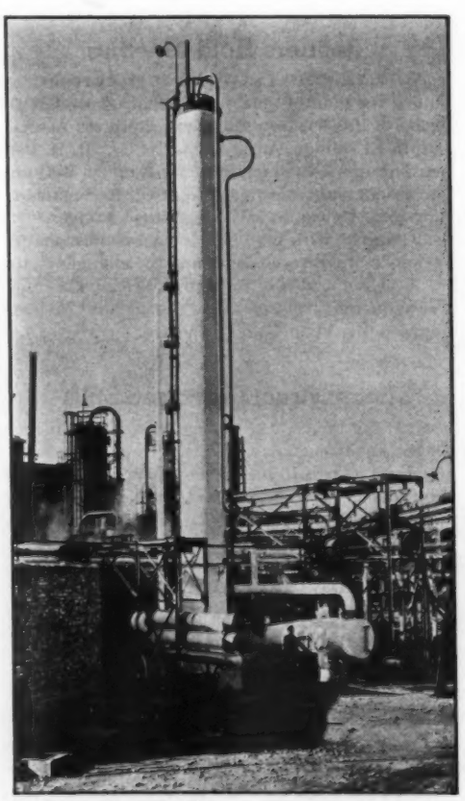
Claim is made the actual pay increase recommended by the investigators will be $9,000,000 instead of $7,000,000 annually and that the cost to corporations of the retirement and back pay features of the plan which the committee endorses will double this last figure.

Answering the charge that some of the companies had sabotaged the Mexican social program, the companies claim they had paid the Mexican government $215,000,000 in taxes through 1933, "at times covering the greatest part of the federal budget."

The companies cite workers' insurance, free medical services for workers and their families, advanced housing conditions, recreational projects and sanitation improvements as among the host of benefits they have contributed to the Mexican social program. They assert, furthermore, they have always paid the highest salaries in Mexico, created work, opened roads and vastly increased value of locally owned lands under lease.

"The investigating committee's report leads us to the conclusion it was not the principal objective of the government experts to report on the financial conditions of the companies based on points in conflict but to justify the attacks on them by the labor unions," the statement asserts. "We wanted the investigation to cover the past 10 years when there were heavy company losses and many companies retired from Mexico. Instead, the report covers only three years."

The committee recommended oil workers be placed on a 40-hour, five-day week with pay for a 56-hour week; that free life insurance and pensions up to 85 per cent of the retiring wages should be granted; that furlough with pay should be granted up to 30 days each year and that 80 per cent of the wages should be paid during nonvocational illness up to four months. It was also recommended workers should receive full pay while on strike, without limit of period. With the companies' reply submitted, the entire question now is in the hands of the board of arbitration which is dominated by the administration and subject to political influences which figured prominently in the treatment thus far accorded the dispute between labor unions in Mexico and the companies.



Gasoline stabilizing unit at Steaua Romana's refinery, Campina, Rumania

New Venezuela Record

Another producing record was established in Venezuela during July when crude output totaled 16,306,312 bbls. The daily average output of 526,010 bbls., however, was nearly 2 per cent less than the rate of 536,431 bbls. per day established in June. Due to the additional day, the July total of 16,306,312 bbls. was nearly 1.4 per cent greater than June.

The feature of July production followed the two preceding months in that Mene Grande Oil Co.'s output in the Tia Juana field continues to grow by substantial amounts. During July, Mene Grande produced a total of 1,113,000 bbls. from the Tia Juana field, nearly equal to the company's combined yield from properties in Lagunillas and La Rosa. In June, Mene Grande produced 937,000 bbls. from the newly opened Tia Juana field. That the increase in production from Tia Juana will level off is indicated by the fact that Mene Grande Oil Co. has reduced its active drilling strings to two at present.

Compared to a year ago, July crude production in Venezuela was up nearly 18 per cent. Production in July, 1936, totaled 13,433,173 bbls., a daily average of 433,329 bbls.

A development which may have important bearing on the future of the Punta Benitez field was reported early this month. Mene Grande Oil Co., formerly Venezuela Gulf, obtained a flowing well capable of 2,000 bbls. daily in the Santa Barbara zone and upper part of the El Mene (Eocene) formation. The production was obtained in Mene Grande No. 16 Huron, which was drilled to a total depth of 2,471 feet. Crude produced from the Santa Barbara and the El Mene formations tested 23.1 gravity. Until completion of No. 16 Huron, the Punta Benitez field produced only from the La Rosa formation averaging 1,800 feet in depth.

The production statistics for the past month compared to a year ago are shown in the following table.

VENEZUELA CRUDE PRODUCTION

(By fields)

	July, 1937	July, 1936	Dly. ave. July, 1937
Lagunillas	8,747,402	7,502,908	282,174
Quiriquire	2,215,017	1,990,014	71,452
La Rosa	2,136,696	1,700,896	68,926
Mene Grande	1,188,974	1,438,000	38,354
Tia Juana	1,113,000	.....	35,903
Parra	379,199	371,200	12,232
Pedernales	122,881	.....	3,964
Concepcion	91,854	92,600	2,963
Cumarebo	239,934	241,409	7,740
El Mene	60,605	82,646	1,955
La Paz	10,750	13,500	347
Total	16,306,312	13,433,173	526,010
Daily average	.....	433,329	.....
Total June, 1937	16,092,922	.....	.....
Dly. av. June, 1937	536,431	.....	.....

(By companies)

Lago Pet. Corp.	5,459,928	4,499,869	176,126
Venezuela Oil Conc.	3,911,165	3,175,500	126,166
Std. of Venezuela	2,957,458	2,576,606	95,401
Caribbean Pet. Co.	1,188,974	1,438,000	38,354
Colon Dev. Co.	379,199	371,200	12,232
Mene Grande	2,289,000	1,229,000	73,838
British Controlled	60,605	82,646	1,955
No. Venez. Pet. Co.	59,983	60,352	1,934
Total	16,306,312	13,433,173	526,010

ENGINEERING AND OPERATING SECTION

Presenting modern developments in operation of producing properties, refineries and gasoline plants, and pipe lines, including petroleum research in the field and laboratory

This Week

HARD FORMATIONS IN LOUISIANA AFFECT DRILLING PRACTICES—By Mitchell Tucker ..... **Page 44**

Practices employed in drilling deep wells in the Cotton Valley field and other deep fields of North Louisiana are greatly affected by the hardness of formations penetrated. Rotating speeds, bit weights, number of drilling lines, mud weights and other drilling factors are varied to obtain maximum results.

OKLAHOMA IMPORTANT PRODUCER OF PARAFFIN BASE CRUDE OILS—By W. L. Nelson ..... **Page 48**

With the discovery of the Oklahoma City, Edmond and Fitts pools, Oklahoma became one of the most important producers of paraffin base crude oils. The effect of these fields, and of other important fields developed in the past 10 years, on the average properties of Oklahoma crudes is discussed.

DETERMINING HYDROGEN SULFIDE CONTENT OF GAS IN THE FIELD—By R. M. Lilly and N. P. Chesnutt . . **Page 52**

Present methods of determining the hydrogen sulfide content of natural gas have proven to be unsatisfactory when applied to field work. An improved analytical method for use in the field, in which ceric sulfate is used as an oxidant, is described.

CORRELATING LABORATORY DIESEL FUEL TESTS WITH ENGINE OPERATION—By W. F. Joachim ..... **Page 62**

In an attempt to establish a single grade of fuel suitable for use in the several types of diesel engines, an investigation was conducted at the U. S. Naval Engineering Experiment Station. Results of the physical-chemical and C.F.R. engine ignition quality tests are correlated with fuel performance in service engines.

ILLUSTRATED OPERATING IDEAS ..... **Page 72**

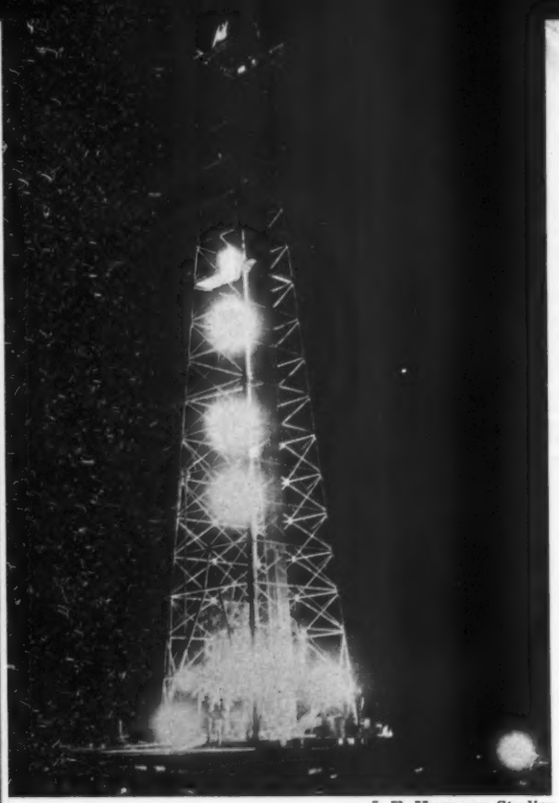
Oil meter hook-up on main line for bypassing vapors. Portable fuel oil tank. Home fenced with old sucker rods and tubing. Sucker rods used to reinforce concrete. Cover protects grass from oil.

PROBLEMS FROM READERS—By L. G. E. Bignell . . **Page 75**

Mileage of crude oil and gasoline pipe lines. Electric coring device and its use. Gas from abandoned coal mines. Meaning of the term, "hole full of water."

QUESTIONS ON TECHNOLOGY — By C. K. Francis, Ph. D. ..... **Page 76**

Modified Ostwald viscosimeter for kinematic viscosity determination. Preparation of activated earths for filtering oils. Manufacture of hydrochloric acid and uses of salt cake in other industries.



J. E. Hampson Studios

Night drilling at Cotton Valley

Hard Formations Affect Drilling

By MITCHELL TUCKER

Among deep tests completed in the Mid-Continent and in California, drilling superintendents and equipment manufacturers recognize the Cotton Valley field of northern Louisiana as one of the most severe and one that calls for ingenuity and skill in getting the most out of equipment made available. In this article the author enumerates in detail drilling practices used in this field.

The drilling of wells to the Lower Marine Trinity formations in northern Louisiana at depths of from 8,000 to 10,000 feet is presenting many problems. Average drilling time to the 8,100-foot level in the Cotton Valley field is from 80 to 100 days, and requires from 60 to 80 rock bits. Wildcats to the 10,000-foot objective have all required from 220 to 280 days, and used from 90 to 120 rock bits.

Not long over two years ago a 3,500-foot test to the base of the Upper Cretaceous was considered adequate to explore any structure on the east side of the Sabine uplift. Following the opening of the Rodessa field, all wildcats were carried through the upper portion of the Lower Cretaceous at about 6,000 feet. Following more recent discoveries, no test of that area is considered complete today that does not penetrate all beds to and including the Lower Marine at the base of the Lower Cretaceous, or of oldest origin in the Mesozoic era, at about 9,000 feet. Such demands from the geologists that these beds be tested at almost every wildcat location has given the drilling organizations a serious problem, not so much as to depth but due to the hard Trinity formations which must be penetrated.

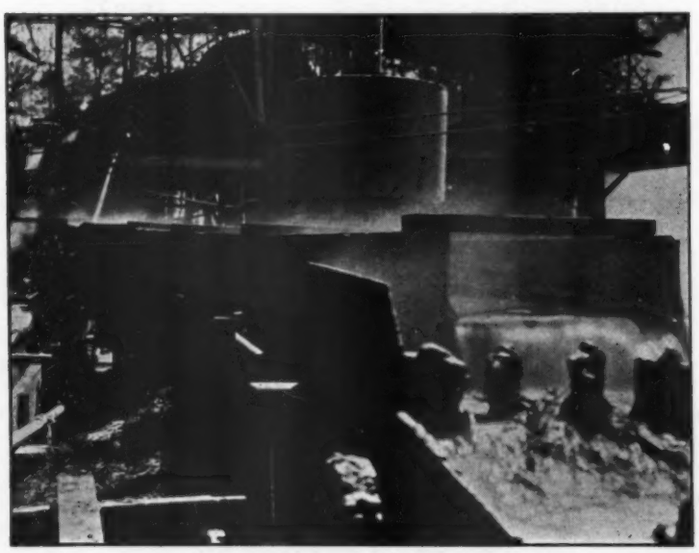
Drilling Conditions

Concentrated efforts and study are now being directed toward determining the proper rotating speeds, bit weights, number of drilling lines, make up of drill stem including bit collars, adapting mud-laden fluids to remove cuttings at various speeds and also serve as a cooling medium to the bit at high bottom-hole temperatures, slush pump pressures, rates of flushing, etc. Clearly, these factors vary from one formation to another, and also with the type and size of equipment used. Furthermore, some of the named factors are diametrically opposed to others, and after careful study a compromise must be made in some to obtain an overall advantage from the others if maximum results are to be realized.

Another limiting factor which is placed upon the employment of these variables through different formations is the need to let safety of operations govern their application; that is, whenever a certain combination of these factors will allow greater footage per day or per bit, but at the same time offer additional hazards either to workmen or equipment, they cannot be wisely applied. The variations in employing these factors in oil well drilling, either to advantage or disadvantage, comprises what is generally referred to as the human or personal element in drilling. In fact, their proper application is becoming more and more the deciding factor in successful drilling operations.

The fact that progress in metallurgy and design of heavy-duty drilling equipment has been rapid over the last few years needs no substantiation. The metallurgist has reduced the weight and bulkiness of the heavy machinery, with an accompanying increase in strength, while the designer and manufacturer has fabricated these advanced metals into drilling equipment of high efficiency. It remains for the operating companies and drilling contractors, or those who comprise the human element in drilling, to bring forward the same degree of improvement.

The experience being gained by careful check and study in the hard digging to the Lower Marine sands at Cotton Valley may be applied to other fields of similar type. The same sort of experimentation has been carried on in other fields of widely different types over the last year or two, all with successful results. These vary from the improved drilling practice in the 3,300-foot East Texas field, where wells are drilled in less than one week and at a minimum cost, to the 10,000-foot routine holes being drilled in about 30 days in some of the salt dome fields of the Gulf Coast.



Handling hot muds at Cotton Valley. Note the steam coming off the 190° F. fluid as it passes through the mud screen

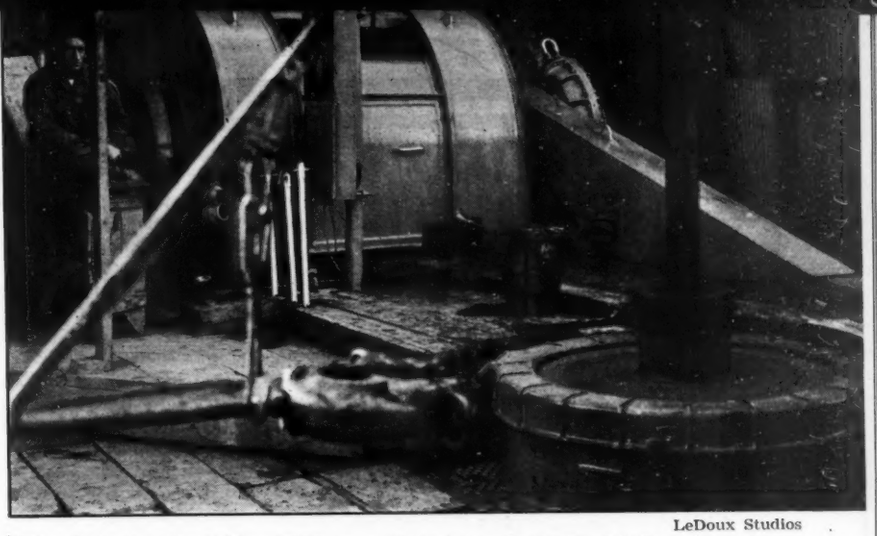
Equipment Used at Cotton Valley

The heaviest and most modern rig is standard at Cotton Valley, employing the 136-foot derrick with substructures, 14-inch by 14-inch steam drilling engine, 9-inch drawworks shaft, the 15½-inch by 8½-inch (liner size) by 20-inch slush pumps, and three 125-horsepower rotary boilers. Rock bits are used from the surface down. An 18⅝-inch or 17½-inch hole is cut below the water sands and 13⅜-inch surface pipe set at about 800 feet. A 12¼-inch bit is used to the top of the Travis Peak red beds at 5,800 feet where 9⅝-inch casing is set and cemented. An 8½-inch or 8⅝-inch bit is used to total depth, permitting the running of a 7-inch O.D. production string to bottom.

About 30 days are required to drill to the 5,800-foot level, using from 10 to 12 rock bits. From 60 to 75 days are required from that point to the 8,100-foot producing level, requiring from fifty to eighty 8⅝-inch rock bits. Obviously, such development is expensive. Drilling contracts were formerly made upon a $6 per foot basis to 6,000 feet, and on a day-work rate to bottom. More recent adjustments have placed contract drilling to total depth at a figure as low as $8 per foot, with lease holder furnishing all materials of construction. Six company-operated rigs are operating in the field. Overall well costs amount to from $100,000 to $125,000 each.

The greatest difference in the make-up of drill stems here as compared to other hard drilling areas is the amount or length of the drill or bit collar. A minimum length collar is used at Cotton Valley for two reasons: First, one

in Louisiana
Practices



LeDoux Studios

Spinning the table at 170 r.p.m. Note the orderly derrick floor layout, with weight and torque indicator close to the driller's position

reamer is universally used just above the bit sub, and in some cases two, assuring that hole will be maintained straight and to gauge, and also permitting the placing of almost the entire weight of the short bit collar on bottom. Second, the formations drilled from 5,800 feet to bottom are so uniform and hard that great weight immediately above the bit is not needed to cut a straight hole.

The long drill stem, built upon the 8⅝-inch bit, varies slightly from one operator to another, but generally a 6-inch O.D. by 2½-inch I.D., 30-foot collar is placed on top of the reamer or reamers, resting immediately above the bit sub. Regular 4-inch or 4½-inch full-hole drill pipe is used to the kelly.

The larger stem, built upon the 12¼-inch bit, consists of the bit, sub, reamer or reamers, 8-inch O.D. by 3½-inch I.D., 30-foot drill collar, and 6-inch or 5-inch full-hole drill pipe to top. If reamers were not used, it is probable that a heavier bit collar would be needed to provide weight to the bit, and at the same time keep the rotating stem in tension.

Flushing Volumes and Pressures

Careful study of the slush pump pressures, rates of discharge, etc., through the different type formations, have resulted in more feet per bit, longer tool joint and drill pipe life, and longer wear on pump liners.

Two large size slush pumps are used, connected in compound but seldom used as such. Normally one is retained in service while the other acts as a standby. The largest size used has the 8½-inch liner capacity and 20-inch stroke, capable of handling 840 gallons at 45 strokes per minute, with a discharge pressure of about 625 pounds, operating at a steam pressure of 300 pounds at the pump.

A normal volume of flushing fluid in most holes is considered to be about 50 gallons per minute for each inch diameter of hole, and at this rate, the normal requirements while using the 12½-inch bit should be about 625 gallons per minute, and with the 8⅝-inch bit about 450 gallons per minute.

The circulating fluid has two primary purposes: First, to remove the cuttings as fast as they are ground and at the same time not jet so much fluid that drilling will be hindered by keeping the bit off bottom; and second, to act as a cooling medium for the fast rotating bit. The proper variation in flushing volumes throughout the beds of different geological age, with accompanying variations in drilling characteristics, is considered important if maximum efficiency is to be secured. Smaller pumps might be employed if used with rock bits having reduced orifices or water courses to build up the pressure required for efficient jetting, but in as much as the fuel cost in this field is negligible, ample steam capacity is usually available under all normal operations and the larger pumps are thought to be more desirable to meet the wide variety of drilling conditions encountered.

Volumes of circulating fluid acting as a cooling medium to the bit are important in Cotton Valley. Subsurface temperatures are very high, reaching a maximum on bottom of about 200° F. The temperature gradient from the top of the Travis Peak beds at about 5,800 feet to bottom is slight, as temperatures at this point often measure 160 to 190° F. Therefore, everything else being equal, a maximum flushing volume is desirable. On the other hand, other more important factors limit rotating speeds below 5,800 feet demand a reduction in flushing volumes. This is just one of the many places where an important decision must be made in adjusting the advantages of one drilling factor to accomplish a more important advantage from another.

In digging with 12¼-inch rock bits through the softer formations from 800 to 5,800 feet, large pump volumes are necessary to accompany fast rotary speeds and to remove the cuttings from the big hole. Should the jetting action of the fluid through the water courses of the bit lag behind, a "ball-up" of the bit invariably results. At the faster rotary speeds, normally up to 150 r.p.m. the big slush pumps are used to near capacity, flushing at the rate of around 800 gallons per minute.

In lower red beds of the Travis Peak, just the opposite has been found very desirable, and shows the need for careful study of prevailing conditions through rapidly changing formations.

The continental or fresh water deposits of the Travis Peak red beds are made up largely of sharp sand formations, very abrasive and detrimental to all metal with which they come in frictional contact. Mud-laden fluids quickly become contaminated with the sharp sand particles, and as a first step in correcting the condition mud screens are universally used. But even so, some of the fine abrasive particles remain in solution to have a harmful effect upon the pump liners, tool joints, and the bit. Too rapid jetting action of this type mud through the bit, in many instances, has reduced the footage received per bit with accompanying reductions in footage per day. Accordingly, many operators have reduced the circulating rates through this formation, at the sacrifice of other less important advantages, to achieve an overall saving.

Low Steam Pressures Used

Experience has also shown that a slower rotating speed below 5,800 feet will make more hole per bit or per day, with a reduction in drilling hazards to the drill stem. Consequently, the smaller amount of circulating fluid will adequately remove the cuttings from the smaller bit and the slower rotation.

No more than 300 pounds steam pressure, at the pumps, is ever used in the field, and considerably less has been found advantageous under certain conditions. In the first place, the lower pressures are desirable to keep down the temperature of the already excessive hot drilling mud. Moreover, obvious advantages have been realized by utilizing the lowest pressures suitable for the work required, because the lower the pump pressure, the less tendency there is for tool joints and bit to cut out by the circulating action of the fluid impregnated by the sharp and abrasive sand particles. Well-known hazards are also removed by operating at lowest pressures conducive to best results.

Two distinct types of drilling muds are used in deep Cotton Valley drilling; one at about 8,000 feet, where change must quickly be made in preparation for penetrating the high-pressure gas sands throughout the next 500 feet.

Four requirements are made of a proper mud to the 8,000-foot level, as follows: (1) The mud must be of such a consistency that maximum cooling can be accomplished during circulation through the surface system and before reintroduction into the hot hole. (2) It must have sufficiently low viscosity through certain formations to properly wash the bit crevices when drilling through several sticky or gummy shale beds. (3) The mud must have sufficient body to hold cuttings in suspension if the pump should stop, and at the same time allow the harmful abrasive cuttings held in suspension to settle out in the mud screen or through mud troughs and pits in the surface system. (4) It must have sufficiently high gel strength and body to seal off porous water and upper oil sands and make for strong hole walls. Hardness of the formation penetrated minimizes trouble from caving. To facili-

All Cotton Valley wells are cased to bottom. This view shows crew stabbing the gun perforator in preparation to shooting casing opposite the desired zone of completion

tate the cooling of mud through the surface system, one enterprising contractor has constructed what might be termed a mud cooling tower. This arrangement consists of a series of long troughs extending from the mud screen over the reserve mud pit. Holes are provided through which the fluid can trinkle out and cool. A reduction in the number of bits used per well has been reported from this practice.

The circulating fluid to the 8,000-foot level averages about 9 pounds per gallon in weight, or only about two-thirds of a pound per gallon heavier than pure water. A viscosity of about 21 is maintained on the fluid of this weight, permitting maximum settling of the sharp sand particles. Commercial mud is added from the surface down in order to condition the fluid to proper gel strength, although some native cuttings above the anhydrite, at around 4,000 feet, are of favorable composition for this purpose.

Weight material is rapidly added to the mud-laden fluid at around 8,000 feet in preparation for the high-pressure gas sands. A maximum mud weight of 12 pounds per gallon is used when drilling the Bodcaw gas sand, at about 8,100 feet, which has a pressure of around 3,500 pounds. Gas bearing zones below this depth have exhibited even greater pressures.

Bit Weights

The part that bit weights, line feeding, and rotary speeds play in obtaining the most feet per bit and the most feet per day at minimum costs, and at the same time preserving equipment under safest operation, are so interconnected that they must of necessity be considered as one adjustment in drilling practice, but for the purpose of simplicity their application will be discussed separately.

Three limitations are placed upon bit weight: (1) Torque capacity of the drill stem itself; (2) need for caution in obtaining straight hole in certain formations, and (3) sufficient weight must be maintained, all other things being equal, to make maximum footage.

When reamers are installed just above the bit sub in the drill stem, they serve to keep the hole to gauge, and almost the full weight of the drill collar may be used on the bit if needed. The gently sloping anticlinal beds in the Cotton Valley field do not offer any inclined surfaces or rapidly changing conditions to the bit to encourage crooked drilling or deviation of the hole, so that the weight to be carried on the drilling bit may be determined without regard to this feature. Therefore, the determining factors in arriving at proper bit weights must combine to provide maximum footage results, with a minimum number of rock bits and with greatest care for safety and maintenance of drilling equipment, particularly the drill stem.

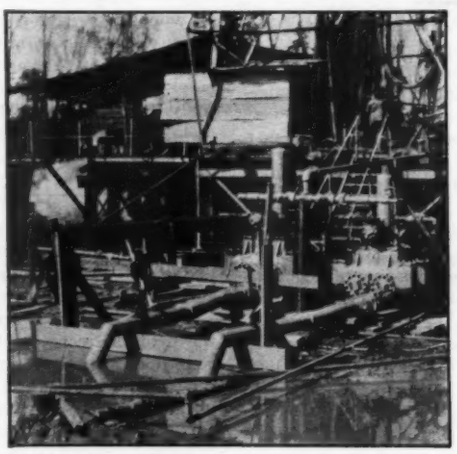
Of course, the application of weight has limitations in both directions; too great a weight will slow up progress due to teeth of the bit becoming packed with formational cuttings which the circulating fluid is unable to keep clean. Too light a bit weight will not make hole.

There is no theoretical way of determining best weights in all formations and under all conditions, so the trial and error method is always resorted to in new fields. However, after the first few holes are drilled some operators have gathered sufficient data to serve as a guide for future operations. In the drilling of Rodessa wells, which are largely uniform, some contractors have prepared weight and table-speed charts that have been found most advantageous throughout all formations.

All rigs have weight indicators as standard equipment to inform the driller of the weight he is carrying on his bit in "points." A point on the weight indicator is a variable depending upon the number of drilling lines being used, size of line, depth of hole, frictional resistance, etc. The indicator hand points to the total weight of the entire drill stem being carried on the line. If the stem weight is known to be 30 points and it is desired to carry 5 points on the bit, the driller feeds the line from the shaft so that the weight indicator points to 25 points, leaving 5 points of weight to be borne by the bit on the cutting surface at the bottom of the hole.

Conversion tables are occasionally provided on the face of the gauge so that drillers can check the actual weight, but for all general purposes, the control of bit weights is in terms of "points." As a rough figure, a point may be considered around 2,500 pounds for six lines and 3,300 pounds for eight lines. Generally, experimental bit weights in a new area vary up and down from an average of about 1,000 pounds per inch diameter of bit.

While drilling to 5,800 feet with 12¼-inch bit, one successful operator maintains a rather uniform bit weight of from 6 to 8 points with six lines, varying slightly with the feeding speed of the line and condition of bit. This represents an actual weight of about 17,500 pounds, and is carried on comparatively rapid rotating speeds up to 170 r.p.m. The 8-inch O.D. by 3-inch I.D. by 30-foot drill collar weighs around 6,000 pounds, and the remaining weight is obtained from the reamers, sub, and bottom joints of drill pipe. When the bit size is reduced at 5,800 feet to 8⅝-inch, the drilling lines are increased to eight, and points of weight reduced to from 5 and 6, which represents



Slush pit and mud pumps at a Cotton Valley drilling rig

an actual weight of about the same as before, or 17,500 pounds.

Weights are slightly increased during bit runs, but on the average this operator prefers to maintain a rather uniform load on bottom, as his experience has indicated that it is more advantageous to vary the volumes of flushing fluids and rotating speeds rather than greatly adjust the bit weights through the beds of varying hardness. In other words, the weight is necessary to make hole in these hard formations, and any adjustments necessary throughout the changing sections are made in the jetting action of the mud and in the rate of rotation.

Another operator has offered reasons why it is preferable to adjust bit weights throughout different parts of the hole, together with speeds and circulating volumes. Eight lines are strung up from the beginning, and 10 to 12 points, sometimes as high as 15, are carried on the 12¼-inch bit to 5,800 feet. Fast rotary speeds, around 150 r.p.m., together with capacity flushing volumes accompany such weight. It is the thought that more footage can be made with the increased weight, without sacrifice of other factors, throughout the comparatively easy drilling section to 5,800 feet.

After changing the bit size to 8½-inch at 5,800 feet, the weight is radically reduced to about 5 points. And from about 7,000 feet down, the weight is reduced to from 3 to 4 points. Such reductions place the 4-inch full-hole drill stem in much greater tension that before, and accompany a like reduction in rotating speeds.

The type of formation drilled below 5,800 feet again influences the selection of bit weights, since tool joints would be very quickly cut out if allowed to run in a wabbling drill stem and rub against the sides of the sharp exposed formations. Pipe protectors are now widely used to minimize such a possibility.

Rotary Table Speeds

Very little precise data are available on proper speeds of rotation through changing strata, and here again the trial and error method is resorted to in the early drilling life of all fields. As would be expected, rates of table speed must vary in accordance with size and type of bit used, and with the formation being penetrated. Experience has conclusively shown that the speed of rotation has a greater effect upon footage and bits used than any other one factor, but high speeds also present greatest hazards to failure of the drill stem or surface equipment.

High rotating speeds, from 150 to 180 r.p.m., are universally used through the uniform beds at Cotton Valley to the Travis Peak at about 5,800 feet. With the 5 or 6-inch full-hole drill pipe on the 12¼-inch bit to this depth such speeds are well within the capacity of the stem. Peak flushing volumes, with variable weights as above discussed, accompany these speeds to 5,800 feet.

In cutting surface hole with the 18⅝- or 17½-inch surface rock bit, a spread of from 90 to 110 r.p.m. is used to achieve best results. Limiting factors upon any faster rate are the larger bit used, and the difficulty with which the circulating pump would have in moving out all the cuttings from this large-diameter hole.

Through a few sticky or gummy shale beds, speeds must be reduced to prevent bit cones from balling up. Through such formations the driller watches rotation much closer than bit weight, as it has been found that if the bit can be kept clean it is desirable to maintain a reasonably high and uniform bottom stem weight.

After changing to the 8⅝-inch bit it would normally be supposed that the rate of table speed could be maintained or increased. However, here the limiting factor in certain type formations call for slower speeds and an adjustment in flushing volumes, for reasons heretofore mentioned. Experience has shown that as much footage can be made through the sharp sandy red beds at speeds of around 80 r.p.m. with a considerable reduction in the number of bits used, than with faster speeds. Through one very hard streak occurring from about 7,400 to 7,500 feet speeds are reduced to as low as 35 r.p.m. in order to make any footage at all. A daily footage here of 10 to 15 feet is considered good, and it has been found that fast spinning will quickly wear out the bit and make practically no hole. Even with the slow grinding, a new rock bit for every 3 to 5 feet is not uncommon. In such beds jetting action is cut to a minimum.

Care must be exercised to see that worn rock bits are not run too long, especially in the Travis Peak red beds where a sharp sandy zone is likely to be encountered at all times. Difficult fishing jobs for bit cones can result if the bit is not changed before the bearings are worn, or before there is a danger of them getting out of gauge and hanging up while coming out of the hole. Here again the function of rotating speeds is important, and offers another justification for the slower rate of drilling through the lower horizons, as worn bits can be detected much more readily at slower table speeds.

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Oklahoma Important Producer of Paraffin Base Crude Oils

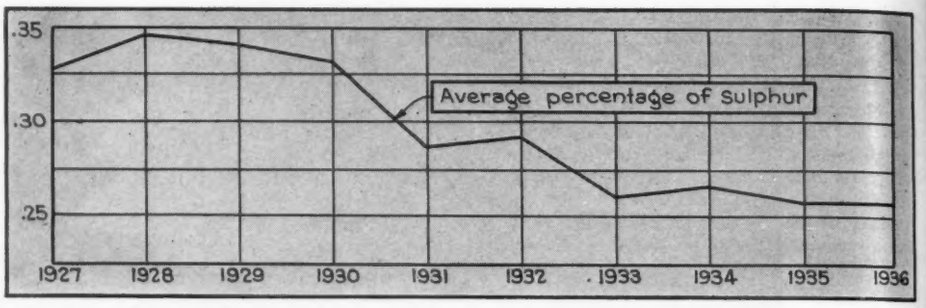
By W. L. NELSON

With the development of the Oklahoma City, Edmond and Fitts fields, Oklahoma became the largest producer of paraffin base petroleum in the United States. The yearly production of paraffin oil since 1933 has ranged from 61,000,000 to 75,000,000 bbls. per year.

The chronological order in which the various Oklahoma fields have been important is somewhat as follows:

	Field—	Production per year, in barrels
1927	Seminole City	47,000,000
	Earlsboro and Bowlegs (each)	36,000,000
	Searight and Burbank (each)	10-15,000,000
1928	Earlsboro	33,000,000
	St. Louis, Pearson, Little River and Bowlegs (each)	20-25,000,000
	Seminole City and Burbank (each)	10-20,000,000
1929	St. Louis-Pearson and Maud	36,000,000
	Earlsboro and Little River (each)	25-30,000,000
	Seminole City and Bowlegs (each)	12,000,000
1930	Oklahoma City	35,000,000
	St. Louis, Little River and Earlsboro (each)	13-23,000,000
1931	Oklahoma City	45,000,000
	Earlsboro	13,000,000
1932	Oklahoma City	33,000,000
	Earlsboro	11,000,000
1933	Oklahoma City	67,000,000
	Earlsboro	11,000,000
1934	Oklahoma City	61,000,000
	Earlsboro	8,000,000
1935	Oklahoma City	53,000,000
	Fitts and Earlsboro (each)	7,000,000
1936	Oklahoma City	51,000,000
	Fitts	20,000,000

Except for occasional large fields, such as Seminole, Earlsboro, Bowlegs and Oklahoma City, the Oklahoma production is made up of a large number of rather small fields. For this reason, the properties of the average crude oil produced each year do not change rapidly. Since 1927, the gasoline content has varied less than 6 per cent, the sulfur content has only ranged from 0.26 to 0.34 per cent, and the gravity from 36.5 to 39 in spite of the large production from the Oklahoma City field which was developed during this period. The variation in these properties and the production since 1927 are shown in the two accompanying graphs. The 24 Oklahoma fields that were large enough during this period to be classed among the 99 largest in the nation are tabulated in Table 1.



Average percentage of sulfur contained in Oklahoma crudes

TABLE 1—LARGEST OKLAHOMA FIELDS DURING THE LAST 10 YEARS

Field—	Gravity A.P.I.	Sulfur (%)	Gasoline and naphtha (%)	Base	Reference
St. Louis-Pearson, Maud	40 6	0 35	39 0	Inter.	(8)
Oklahoma City	38 7	0 175	28 8	Para.	(12)
Edmond	40 5	0 19	31 6	Para.	(8)
Little River	39 0	0 38	42	Inter.	(9)
Marshall-Lovell-Crescent	41 0	0 10	36 8	Inter.	(9)
Allen	29 7	0 62	22 7	Inter.	(2)
Carr City	42 8	0 29	40 0	Inter.	(8)
Seminole City	39 0	0 38	42 0	Inter.	(9)
Earlsboro	43 6	0 31	41 3	Inter.	(13)
Bowlegs	38 5	0 31	37 1	Inter.	(13)
Searight	38 0	0 30	35 3	Inter.	(13) (6)
Sholem-Alechem-Tatums	26 8	....	19 8	Inter.	(9)
Burbank	37 6	0 32	29 7	Inter.	(2)
Tonkawa	43 4	0 24	43 2	Inter.	(2)
Bristow	30 2	0 44	22 9	Inter.	(2)
Cushing-Shamrock	39 2	0 26	35 5	Inter.	(2) (9)
Cromwell	39 0	0 14	34 5	Inter.	(2)
Healdton	31 1	0 72	22 3	Inter.	(2)
Fish	35 5	..	25 7	Inter.	(9)
Fitts	39 2	0 18	27 0	Para.	(8)
Lucien	42 5	0 14	38 0	Inter.	(8)
Garber	45 6	0 14	52 4	Inter.	(2)
Wewoka	38 9	0 18	35 0	Inter.	(13)
South Burbank	37.6	0.32	29.7	Inter.	(2)

The three large paraffin-base fields in Oklahoma are Oklahoma City, Edmond and Fitts. Of these, Oklahoma City became important in 1929 but did not greatly alter the percentage production of paraffin base oil until 1930. The other two fields did not become important until 1935-1936. All of the other fields produce intermediate base crude oil and no large naphthene base fields have been discovered in Oklahoma.

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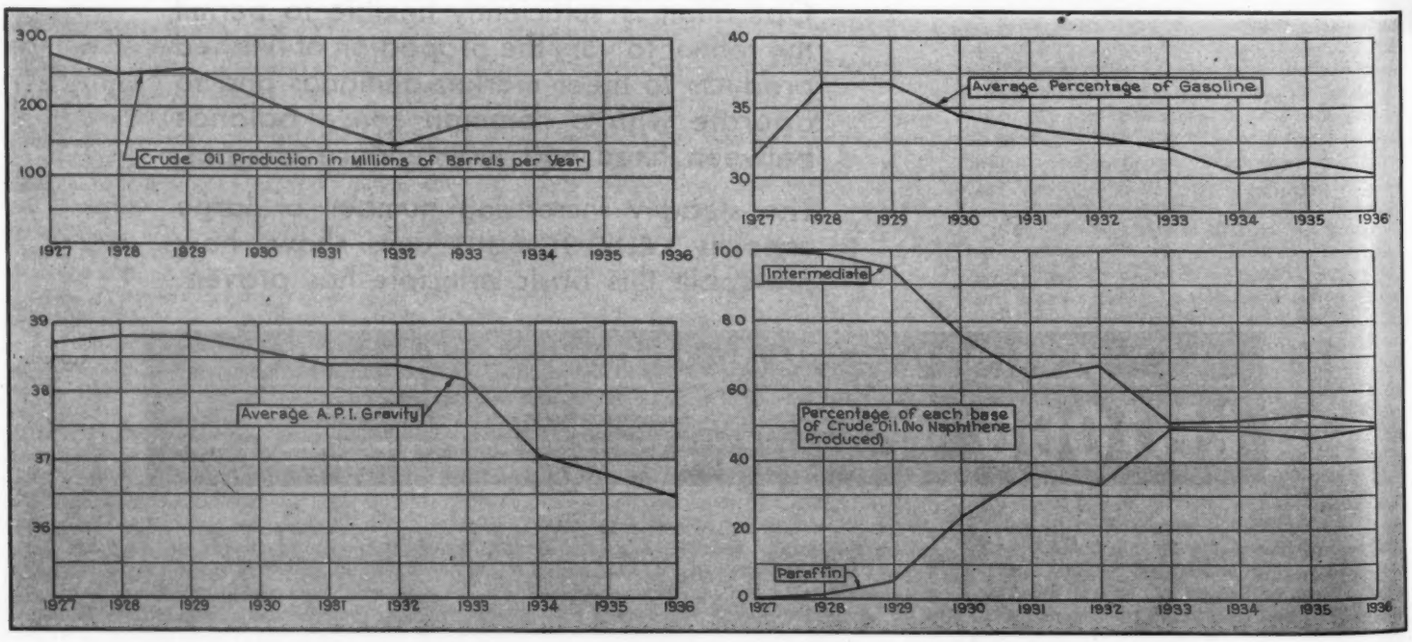

Production, gasoline content, A.P.I. gravity, and percentage of each base of crude oil produced in Oklahoma

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Determining Hydrogen Sulfide Content of Gas in the Field

By R. M. LILLY and N. P. CHESNUTT*

The methods commonly used for determining the hydrogen sulfide content of natural gas are far from satisfactory when approached from the viewpoint of field operations. When one stops to consider that these determinations are of necessity made in the field, far from a laboratory and its conveniences, the importance of an analytical method that will combine ease of manipulation with accuracy becomes apparent.

A little consideration of the conditions imposed will show that a satisfactory field method must conform rather closely to the following requirements:

1. At least one of the standard solutions used should be permanently stable.
2. The filtering of a precipitate should be eliminated.
3. The indicator should be stable, of the internal type, and give a brilliant color reaction at the endpoint.
4. The procedure should eliminate the necessity for transporting filtrates or precipitates.
5. The method should possess the ability to use a large sample of gas, and provision made for varying the size of sample when desired.

Of the half dozen or more methods applicable to the determination of hydrogen sulfide in gas, only two are very generally used, the iodometric (including both Tutwiler‡ and cadmium sulfide precipitation) and the silver sulfate methods. These methods are accurate and satisfactory as laboratory procedures but application of the above requirements prove them to be definitely unsuited to field work.

The silver sulfate method and most of the iodometric procedures using cadmium salts require the filtration of a precipitate, a complication that is not only troublesome but involves large chances of error, particularly as executed in the field.

The solutions of iodometry are highly unstable those of iodine losing strength both from its own volatility and from the photo-chemical action of sunlight. Its reductant, sodium thio-sulfate, is readily decomposed by that most common of contaminants, carbon dioxide. Unless elaborate precautions are taken to follow textbook directions and keep these reagents in dark colored bottles in a cool place, the field operator is soon making determinations with solutions the true strength of which is a matter of mystery.†

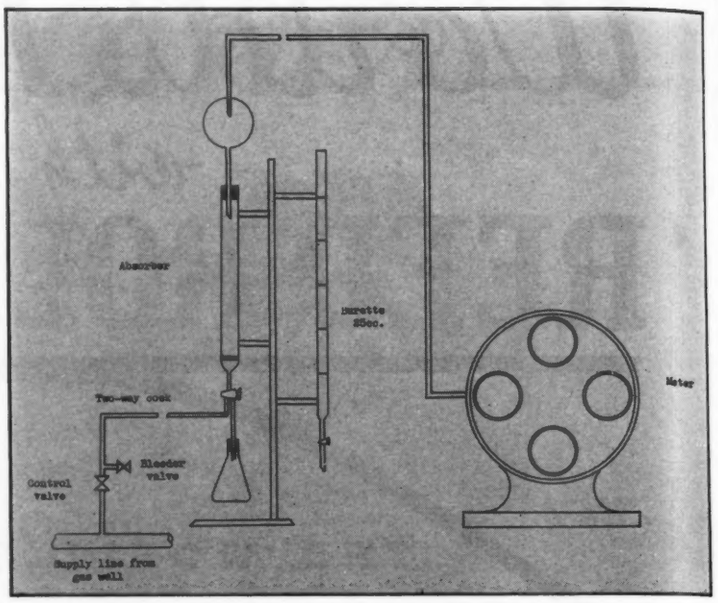

Fig. 2—Apparatus used in preliminary experiments with ceric sulfate in acid solution

As regards indicators for the two methods, the intense blue of the starch-iodine reaction is probably the most brilliant endpoint known to chemistry. Starch solution, however, is subject to mold and must be prepared fresh daily, a troublesome procedure for the field man. The sodium chromate indicator of the silver sulfate method is unsatisfactory as regards the intensity of color produced; furthermore, unless conditions are controlled as to acidity, it is admittedly inaccurate.

In an effort to develop a method conforming as closely as possible to the above requirements, the authors decided to investigate the possible application of ceric sulfate—$Ce(SO_4)_2$.

Originally the application of this remarkable oxidant was limited to potentiometric titrations. This major disadvantage has now been overcome by the recent development of satisfactory internal oxidation-reduction indicators. As a volumetric reagent a list of its advantages are as follows:

1. In acid solution, $Ce(SO_4)_2$ is a powerful oxidizing agent, comparable in strength to potassium permanganate.
2. Its solutions are permanently stable, being nonvolatile and unaffected by light, air or carbon dioxide.[1]
3. The electronic exchange is simple. One change only being possible—Ce++++ to Ce+++. Thereby eliminating or at least reducing, the possibility of side reactions.
4. The use of ortho-phenanthroline ferrous complex[2] as internal oxidation-reduction indicator permits a brilliant endpoint.
5. This indicator is permanently stable and is fully reversible. Its color change is from an intense red to a faint (almost colorless) blue and vice versa.

Ceric sulfate in acid solution is readily reduced by hydrogen sulfide,[3] the reaction occurring as per the following equation:

$$2Ce(SO_4)_2 + H_2S = Ce_2(SO_4)_3 + S + H_2SO_4$$

In an effort to prove that this reaction was complete and quantitative, a number of preliminary experiments were made using the following procedure and the apparatus illustrated in Figure 1.

Measured amounts of ferrous sulfide were

*This research work was undertaken as a joint project under direct supervision of Southern Union Gas Co.

‡The Tutwiler burette is not in good favor for accurate analyses or for gases of low concentration. A 100-cc. sample of gas is used and the results are calculated to grains per 100 cubic feet. As a result, even a small error in the determination of the 100-cc. sample is multiplied 28,320 times when calculated to a volume of 100 cubic feet.

†In an effort to eliminate these possibilities for error, chemists of the Phillips Petroleum Co. designed a titrating vessel in which the entire absorber and cadmium sulfide precipitate is enclosed and shipped to a laboratory. This method achieves accuracy, but at a considerable cost. The glass apparatus is fragile, expensive and the titrating procedure is cumbersome. It further entails the danger of mishap during transportation and a considerable lapse of time before the results of the test are known.

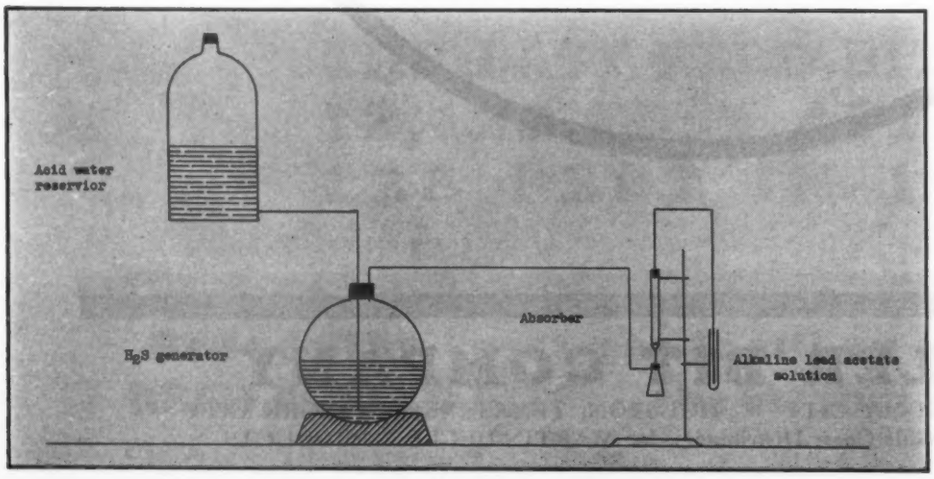

Fig. 1—Analytical set-up used in determining the hydrogen sulfide content of gases

placed in a large flask and acidified with dilute sulfuric acid for the formation of H_2S. Introducing acid water into the flask forced the H_2S laden air out, and through an absorber containing a measured excess of standard $Ce(SO_4)_2$‡ and thence through a solution of alkaline lead acetate.§ The unused excess of ceric sulfate was then titrated with the standard ferrous reducing solution and the amount of H_2S calculated from the results.

As regards extreme accuracy, flaws in the above procedure are quite obvious and were realized. Lack of laboratory facilities precluded the use of methods more desirable. Nevertheless, the H_2S, as determined thereby so closely approximated the amount as calculated from the weight of FeS that the results were highly regarded and distinctly encouraging. Determinations would duplicate themselves to a high degree and, repeated tests proved that so long as the ceric sulfate absorbent was maintained in excess, a positive test for hydrogen sulfide would not appear in the alkaline lead acetate solution.

On the basis of the satisfactory results obtained from these above experiments, an apparatus was designed and set up for field tests against gases of known concentration.‖ Numerous successful comparisons against these gases confirmed that the reaction between ceric sulfate and hydrogen sulfide was quantitative. These tests were made on gases ranging in content from zero to 250 grains per 100 cubic feet.

With some methods, when testing gases of a high and unknown concentration, it not infrequently occurs that an operator will pass a volume of gas through the absorber that exceeds in H_2S content the capacity of the absorbent. This necessitates a complete rerunning of the test using a lesser volume of gas. The ceric sulfate method eliminates this possibility by offering a visible indication of the approaching saturation point. The ceric ion is yellow; in the reduced cerous condition it is colorless. Further, the oxidation of hydrogen sulfide causes a milky opalescence in the absorbing solution due to the presence of suspended free sulfur. With even a little experience, observing the degree of milkiness or the fading yellow of the ceric solution informs the operator when it is advisable to discontinue the flow of gas.

The analytical set-up is illustrated in Figure 2. It consists of a 25-cc. burette, an erlenmeyer flask, a spray trap, a specially designed absorber, a wet gas meter and, of course, the necessary rubber tubing, stoppers and a stand. The absorber consists of a long tube of jena glass with a porous, sintered glass diffusion disk sealed in the lower portion. This piece of glassware was originally designed and sold by the manufacturer as a mercury filter. It was first used as an absorber by Edgar and Calingaert¶ and was later recommended as such by Horne and Shirey.[4] It is herein improved by the use of a two-way stop-cock as shown in Figure 3.

The analytical procedure is as follows: Close stop-cock A and remove spray trap, pipette into the absorber 10 cc. of standard ceric sulfate and dilute to nearly twice its volume with distilled water. Replace spray trap, turn valve A to communicate with B and bubble gas through absorber at a rate not exceeding 3 cubic feet per hour. When the desired amount of gas has been run through the absorber, or when the ceric solution shows signs of approaching saturation, close valve A and shut off the flow. Turn valve A to connect with erlenmeyer flask, disconnect rubber tubing at the meter and blow the contents of absorber into flask. Remove spray trap and wash down with a fine stream from water bottle. Replace trap and blow into flask as above. Repeat until sufficiently washed, then remove flask, dilute to desired volume (approx. 100 cc.), add two drops of orthophenanthroline ferrous complex indicator and titrate with N/ .1 ferrous solution in the 25-cc. burette. When the solution fades from yellow to an almost colorless blue, add the ferrous solution dropwise. The endpoint is indicated by the sharp and sudden appearance of an intense red color. It is impossible to miss the endpoint and no indicator correction is necessary.

As an analytical method a list of its advantages are as follows:

1. The ceric sulfate absorbent is a permanently stable volumetric reagent.
2. The indicator is stable, of the internal type and permits a brilliant endpoint reaction.
3. The procedure does not require the filtering of a precipitate nor the transportation of either a filtrate or a precipitate.
4. The size of the gas sample and the amount of absorbent used may be varied as desired.
5. The method attains accuracy—with an ease and convenience of manipulation absolutely unapproached by other methods.
6. The analytical apparatus is sturdy and is neither complicated nor expensive.

Discussion of method: It is believed that only one point in the analytical procedure needs any

(Continued on Page 58)

‡Prepared solutions of ceric sulfate, ferrous sulfate and the indicator ortho-phenanthroline ferrous complex were obtained from chemical supply houses. The ceric and ferrous solution were normal tenth in strength.

§The purpose of the alkaline lead acetate (Na_2PbO_2) being to test for H_2S escaping the action of the ceric sulfate absorbent. According to Truesdale (Ind. and Eng. Chem., Anal. Ed. 2, 299, 1930), alkaline lead acetate is the most sensitive of known tests for the presence of hydrogen sulfide.

‖As determined iodometrically.

¶Used as an absorber in their lamp method for the determination of total sulfur in petroleum derivatives. (Ind and Eng. Chem., Anal. Ed., Vol. 2, No. 1, page 104, 1930.)

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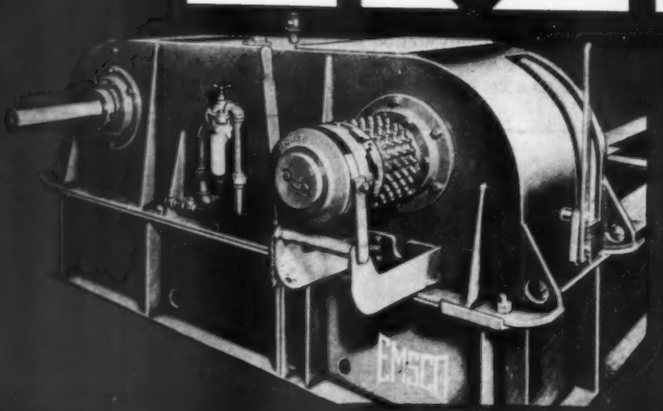

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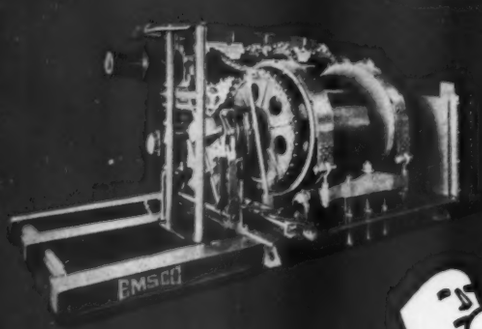

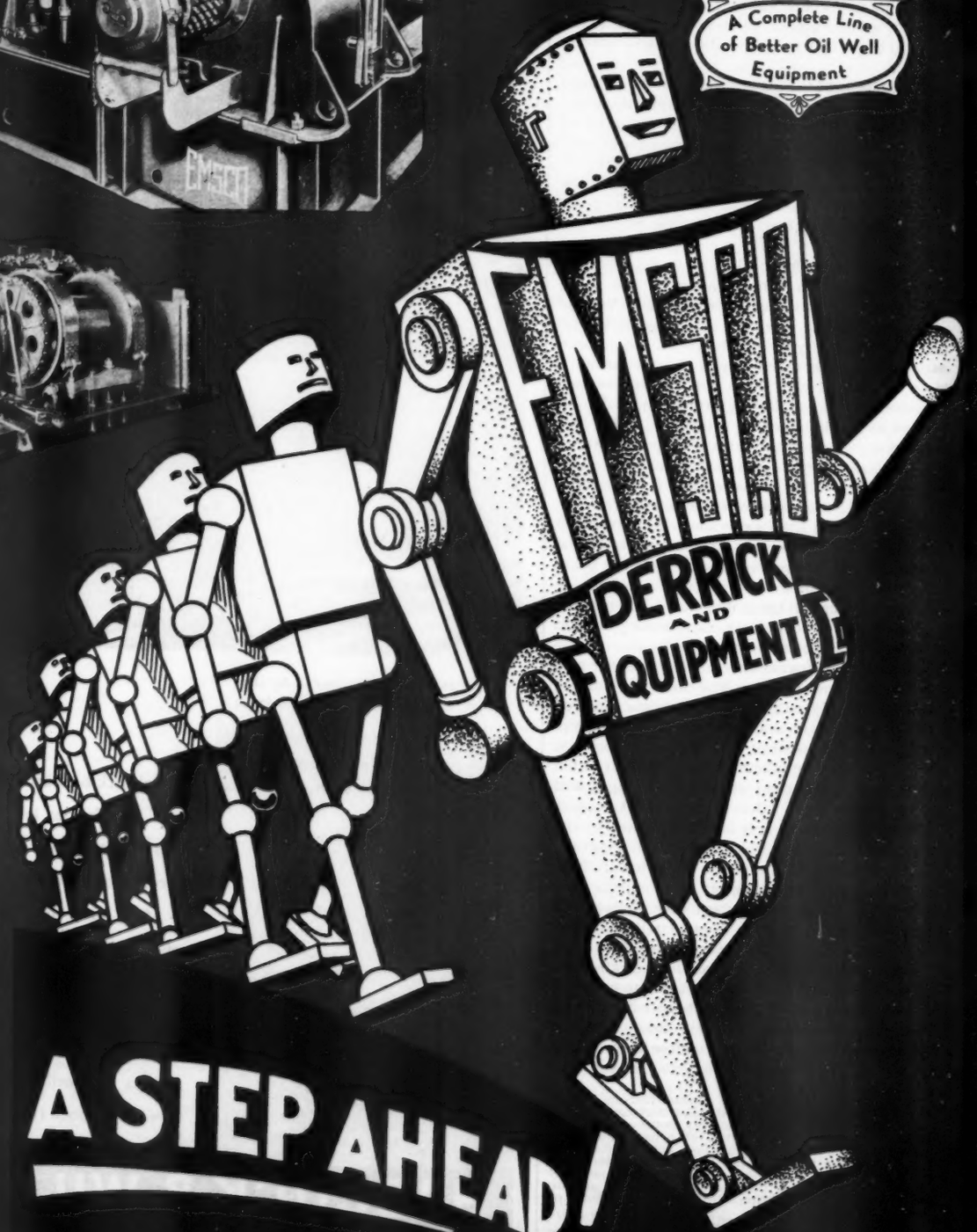

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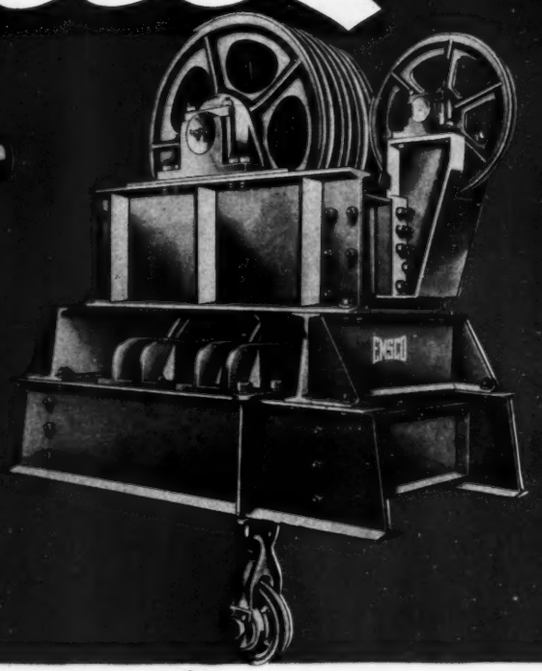

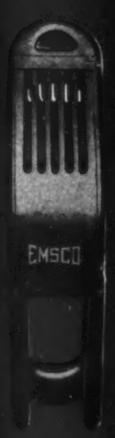

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explanation. The milky suspension of free sulfur is a by-product of the reaction between ceric sulfate and hydrogen sulfide. This suspension passes readily through the diffusion disk into the titrating flask, but traces of it will remain in the absorber as a thin film on its walls, impossible to wash free. This sulfur plays no part in the following titration and its presence or absence in no way affects the accuracy of results. Nor does it interfere with following tests. It is easily removed with dichromate cleaning solution.

The optimum rate of flow will vary widely with the type of absorber and the amount of absorbent used. Under the conditions specified in the analytical procedure the rate of flow should be maintained at 3 cubic feet per hour or less.

The amount of absorbent and the size of gas sample may be varied with conditions. For example, on 250-grain gas the authors adjusted the procedure to use 25 cc. of ceric sulfate and ran a gas sample of 0.2 cubic foot. On 1 grain gas, 10 cc. of absorbent and a 2.5 cubic foot sample were used.

A few experiments were made using solution of ceric sulfate N/.05 in strength. These were satisfactory but some attention must be paid to conditions. If too small a volume of absorbent is used, dilution preparatory to titrating will so reduce the acidity that the indicator may fail to work. In this event, either the amount of absorbent must be increased or a few cc.'s of dilute sulfuric acid added before the titration.

Although ceric sulfate is permanently stable, its reducing solution, ferrous sulfate, is not. Its normality should be redetermined at intervals by a comparison titration with $Ce(SO_4)_2$.

The calculation of results using any strength solutions is as follows:

$$\text{Grains } H_2S \text{ per 100 cubic feet} = \left[(\text{cc. of } Ce(SO_4)_2 \times \text{N.}) - (\text{cc. of } FeSO_4 \times \text{N.}) \times 0.28\right] \times \frac{100}{\text{cu. ft. of sample}}$$

Most methods for the determination of H_2S are subject to error when mercaptans are present in the gas. An attempt was therefore made to determine their effect on standard solutions of ceric sulfate. Again the lack of proper laboratory facilities prevented a complete investigation. While the results are inconclusive, they may be of interest and are detailed herewith:

A sample of an extremely sour gasoline was obtained from a local natural gasoline plant. This gasoline had been caustic washed for removal of H_2S. Tests for mercaptans using mercuric chloride, sodium plumbite and silver nitrate showed their presence in large quantities.

A measured 10-cc. portion of this gasoline was placed in a 4-ounce bottle along with 5-cc. of standard doctor solution and shaken vigorously.** This bottle was labeled sample No. 2.

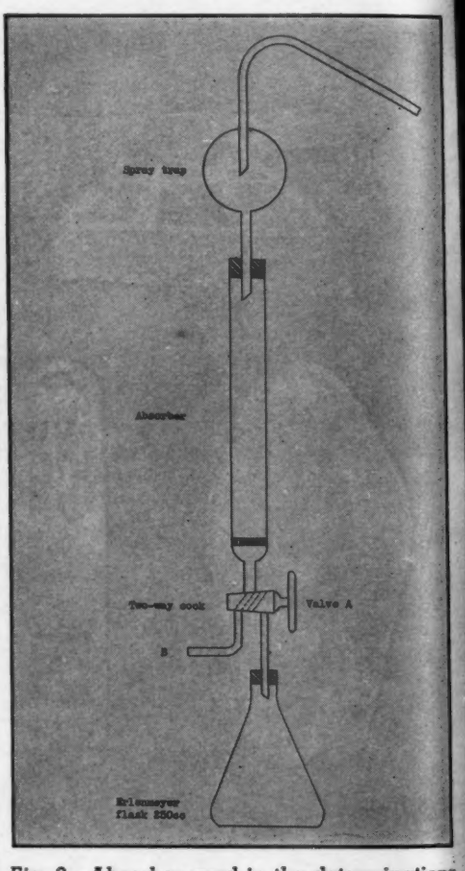

Fig. 3—Absorber used in the determinations

A measured 15-cc. portion of this gasoline was placed in a 4-ounce bottle labeled sample No. 1, and 10 cc. of standard ceric solution were introduced therein and contacted by vigorous shaking. After settling, 10 cc. of this gasoline was removed and shaken with 5 cc. of doctor solution as above.

Colorimetric comparison of sample No. 1 with sample No. 2 indicated that there had been no reaction between the mercaptans and ceric sulfate. A

(Continued on Page 70)

**The presence of mercaptans is indicated by a discoloration of the gasoline. This discoloration is roughly proportional to their presence therein and is due to the formation of the dark colored lead mercaptide—$Pb(RS)_2$.

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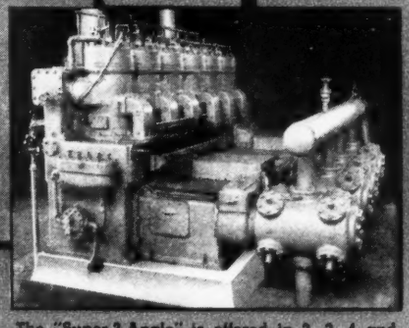

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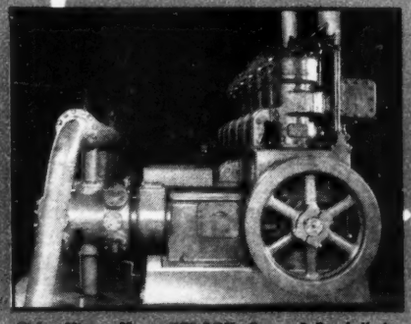

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Correlating Laboratory Diesel Fuel Tests With Engine Operation

By W. F. JOACHIM*

The object of the U. S. Naval diesel fuel investigation is the establishment of standard Navy specifications for a single grade of fuel that will be suitable for use in the several types of diesel engines now in or immediately contemplated for the naval service, and the study and investigation of those engine design characteristics which will ultimately lead to the development of an engine that will be independent of as many limiting characteristics of the fuel oil as possible.

In order for a single grade of diesel fuel to be suitable in the naval service it must meet the following requirements:

1. In short- or long-time storage, the fuel must have minimum fire hazard, minimum deterioration and aging, minimum physical separation and settling, and minimum tank and pipe line corrosive characteristics.

2. The fuel must be capable of being pumped from storage tanks to naval vessels in winter weather without preheating and must flow freely in the fuel systems of motor boat engines without clogging fuel filters with wax or sediments.

3. The ignition and other physical-chemical characteristics of the fuel must provide easy starting in cold weather.

4. The burning qualities of the fuel must be capable of minimizing combustion shock and must provide maximum power and economy with freedom from visible exhaust smoke under all service conditions.

5. The fuel must not cause lacquers, gums, sludge nor harmful carbonization of injection system parts, pistons, rings, cylinder liners or valves. Engine maintenance chargeable to the fuel must be a minimum.

6. The fuel must not cause injection system or engine wear due to insufficient lubricating properties, abrasive or corrosive contaminants or due to slow oxidizing combustion.

7. The fuel must be produced from domestic crude oils by recognized commercial refining processes in order that the supply will be adequate in national emergencies without increased cost.

The diesel fuel investigation at the U. S. Naval Engineering Experiment Station, authorized by the Bureau of Engineering in 1934, has included long-time storage tests, injection pump tests at low temperatures, cold starting tests, physical-chemical analyses, C.F.R. engine ignition quality tests and combustion shock, power and economy, carbonization, exhaust smoke and miscellaneous fuel performance tests in several service diesel engines.

This paper presents a brief review of some of the work done in correlating the results of the physical-chemical and C.F.R. engine ignition quality tests with fuel performance in service engines.

Correlation of Ignition Indices

The first equipment installed for diesel fuel testing at the Engineering Experiment Station consisted of the C.F.R. diesel conversion engine fitted with variable compression ratio open-type and high turbulence-type cylinders and a single cylinder, 4¼ x 6, 1,800 r.p.m., four-cycle precombustion chamber type Fairbanks-Morse diesel engine rated at 10 B.H.P. These engines have been fully described in previous reports and publications.[1, 2, 3]

A.S.M.E.—Presented at the National Oil and Gas Power Meeting, Pennsylvania State College, August 18 to 21, 1937

Twenty-five different, undoped diesel fuels, obtained from various petroleum refiners and naval supply bases and having a wide range of ignition qualities and other physical-chemical characteristics, were analyzed in the chemical laboratory, tested in the C.F.R. engine for critical compression ratio and knockmeter-delay cetane numbers and in the Fairbanks-Morse diesel engine for ignition delay, combustion rates, power and economy, exhaust smoke and temperature, carbonization and gumming, idling, acceleration and other characteristics.[4]

Thirteen fuel ignition quality indices, consisting of cetane number ratings by the critical compression ratio and knockmeter-delay methods, cetane number (Moore) and blending octane number determined in the C.F.R. engine, and aniline point, diesel index number, viscosity-gravity constant, boiling point-gravity constant, spontaneous ignition temperature and the paraffinic, unsaturated, naphthenic and aromatic components of the fuels derived from physical-chemical analyses, were plotted as ordinates against the performances of the fuels in the Fairbanks-Morse engine. While practically all fuel performance characteristics in the service engine showed some trend with variation in the 13 ignition quality indices, only those resulting in appreciable effects are given in this paper.

Figures 1, 2 and 3 show the correlation of the 13 laboratory indices with the ignition delays, maximum cylinder pressures and computed combustion shocks measured in the Fairbanks-Morse engine. The computed combustion shock index, derived from the product of the explosion pressure rise and fuel burning rate following ignition, measured from cylinder pressure indicator cards, have been described in previous papers and reports.[4, 5, 6]

Inspection of these 13 correlations shows that the degree of correlation is different for each fuel ignition quality index. Thus, although the effects of fuel characteristics other than ignition quality, such as distillation range and viscosity, have caused dispersion of the data in all indices, the superior correlations of the boiling-gravity constant, cetane number by the critical compression ratio method

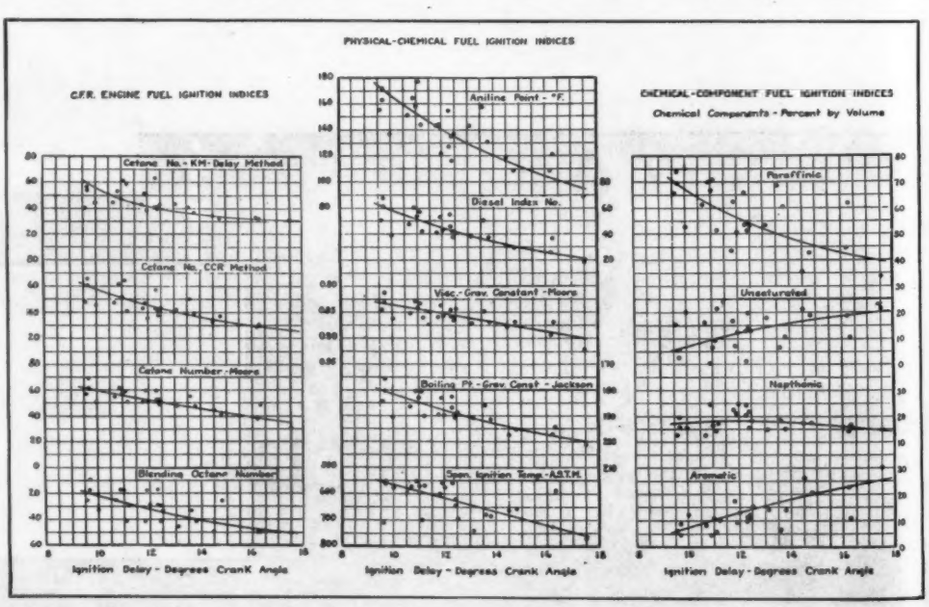

Fig. 1.—Correlation of C.F.R. engine, physical-chemical and chemical-component fuel ignition indices of 25 diesel fuels with the ignition delays measured in a Fairbanks-Morse 4-cycle diesel engine

Bore and stroke, 4¼x6; speed, 1,200 r.p.m.; 10 B.H.P. sin gle-cylinder engine. Data is for 8 B.H.P. at 1,200 r.p.m.

*Senior Mechanical Engineer (Diesel) U. S. Naval Engineering Experiment Station, Annapolis, Md. Paper presented under the author's title of, "Correlation of Laboratory Tests on Diesel Fuels With Service Engine Operation."

Note: Statements and opinions advanced in papers are to be understood as individual expressions of their authors, and not those of the society.

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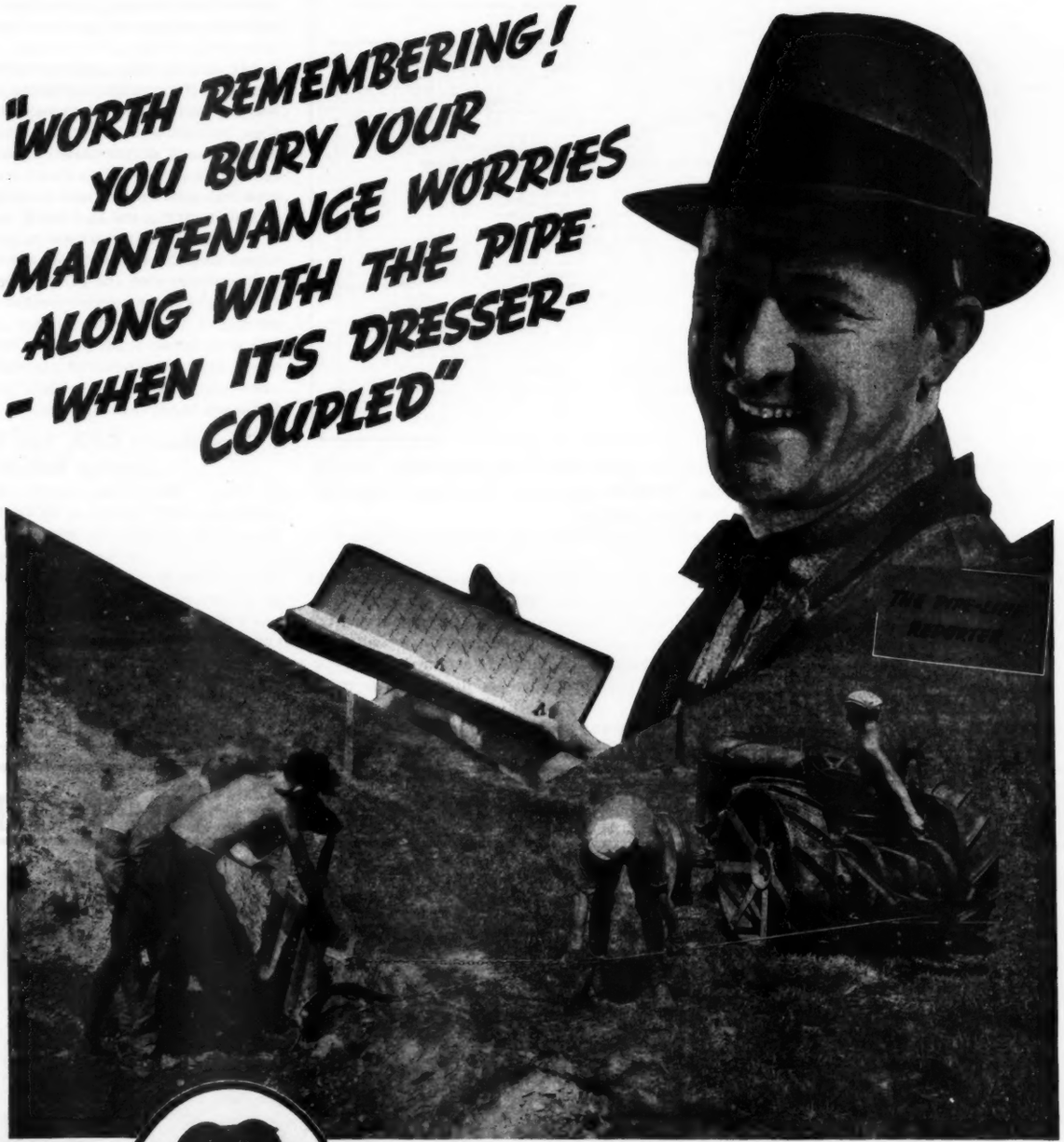

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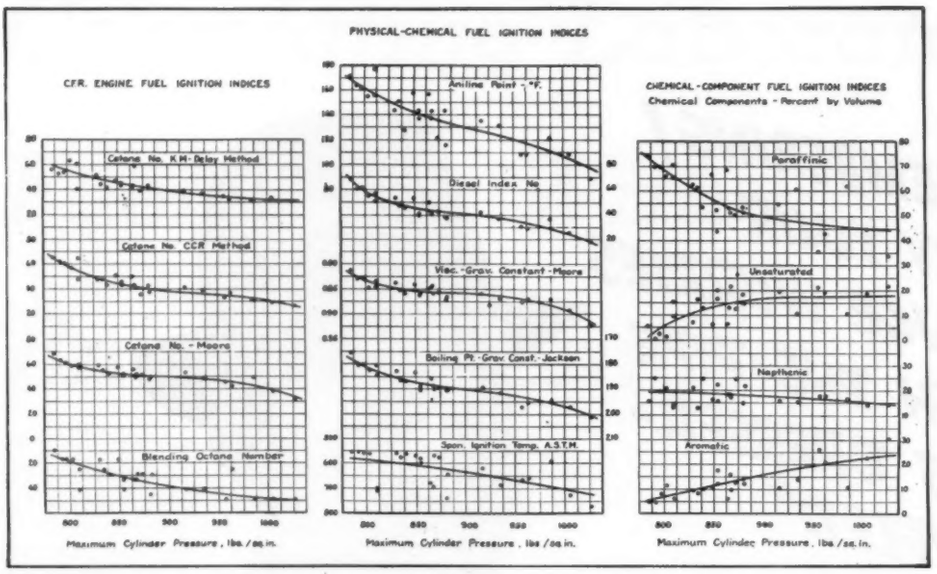

Fig. 2—Correlation of C.F.R. engine, physical-chemical and chemical-component fuel ignition indices of 25 diesel fuels with the maximum cylinder pressures developed in a Fairbanks-Morse 4-cycle diesel engine

Bore and stroke, 4¼ x6; speed, 1,200 r.p.m.; 10 B.H.P. single-cylinder engine. Data is for 8 B.H.P. at 1,200 r.p.m.

and the diesel index number with the measured ignition delays, maximum cylinder pressures and computed combustion shocks of the service engine are apparent when compared with the inferior correlations of the spontaneous temperatures and naphthenic fuel components.

In order to calculate the accuracy of correlation of these 13 indices and thus determine the relative value of each as an index of fuel performance in a service engine, the deviations of each fuel data point from its carefully drawn average curve were measured and the average deviation for all fuels per unit slope of the curve determined for all correlations. This procedure is described in reference 4.

Figure 4 gives the tabular results of these calculations. It is interesting to note in the table of "relative accuracies" that the computed combustion shock measurements in the service engine resulted in the highest relative accuracy when all ignition indices are averaged, with those from maximum cylinder pressure and ignition delay measurements following in the order named. When only the C.F.R. engine and physical-chemical indices are averaged, the maximum cylinder pressure measurements resulted in the highest relative accuracy, thus indicating that for this type of engine the measurement of maximum cylinder pressure or of computed combustion shock from cylinder pressure indicator cards gives satisfactory indications of the quality of the fuel being used.

The results of these tests on both doped and undoped fuels showed that only the knockmeter-delay cetane number on the C.F.R. engine and the ignition delay cetane number from the Winton engine correlated with service engine fuel performance and that, for all types of fuels, only an engine test based on ignition delay or combustion shock measurements could be relied upon to predict fuel performance in service engines.

Correlation of C.F.R. Fuel Ratings With Service Ratings

While the C.F.R. engine knockmeter-delay cetane number method of rating the ignition qualities of diesel fuels has been adopted as the tentative standard C.F.R.-A.S.T.M. method, and tests have proven its correlation with fuel performance in service engines to be satisfactory, it has been realized that the instruments employed are difficult of adjustment and maintenance and the test procedure cumbersome, so that the volunteer group for compression ignition research has initiated investigations into several additional methods of rating diesel fuels. These additional methods are

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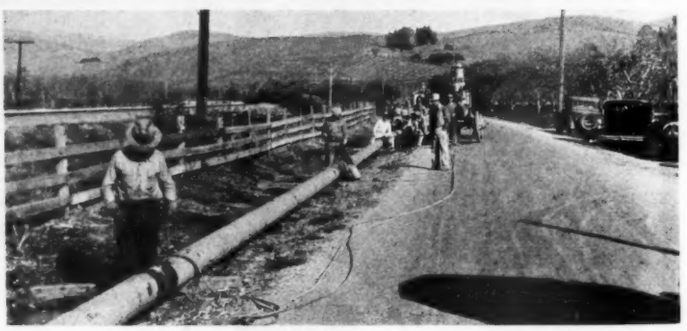

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based on the ignition delay of the fuel with the engine operating substantially under service conditions, considering various engine types and compression ratios now in commercial use. The new methods are being developed by the various members of the volunteer group for compression ignition research.

In order to obtain wide experience with these new diesel fuel ignition quality rating methods and compare fuel ratings between several laboratories for the same method and determine that difference exists between the several methods, the volunteer group has sent sufficient quantities of 12 different fuel samples for complete fuel ignition quality to 16 cooperating laboratories including the Engineering Experiment Station and has reported the results of the tests in a paper presented by the chairman and secretary of the volunteer group to the Society of Automotive Engineers and the Second World Petroleum Congress.[8]

The data contained in this report have been summarized in this paper so as to present the average reference fuel number equivalents of each fuel for the cooperating laboratories reporting on each of the various test methods. The average deviation of the reported reference numbers between laboratories for each fuel and the average deviation between laboratories for all fuels for each ignition quality rating method have also been calculated. Further, the average deviation between the five C.F.R. engine ratings and the ignition quality ratings made on a Fairbanks-Morse diesel engine by the Standard Oil Co. of California and those made on the Winton diesel engine by the Engineering Experiment Station have been determined. These data are presented in Figure 6, where a summary table also shows the laboratory deviations, service engine correlations and testing times for each diesel fuel ignition quality rating method.

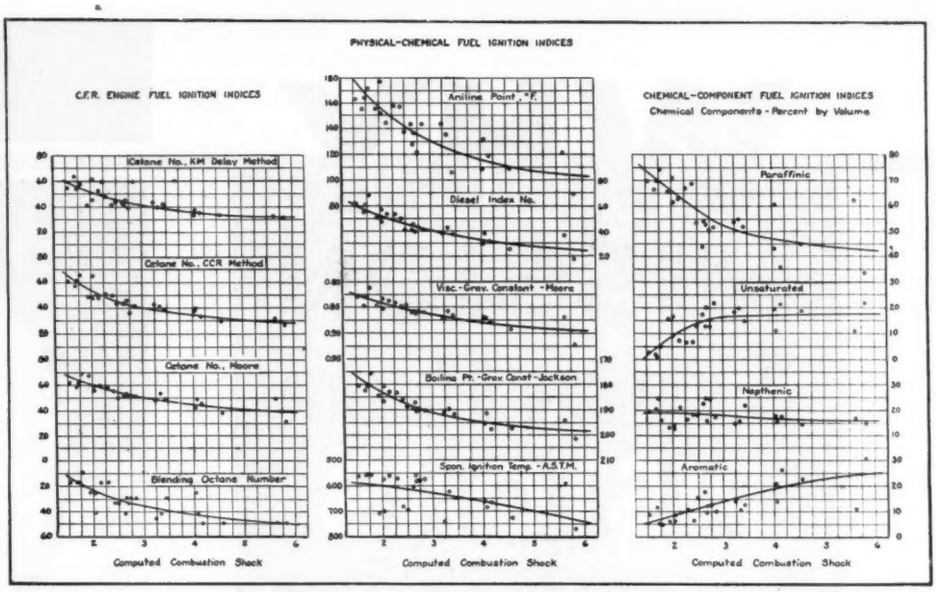
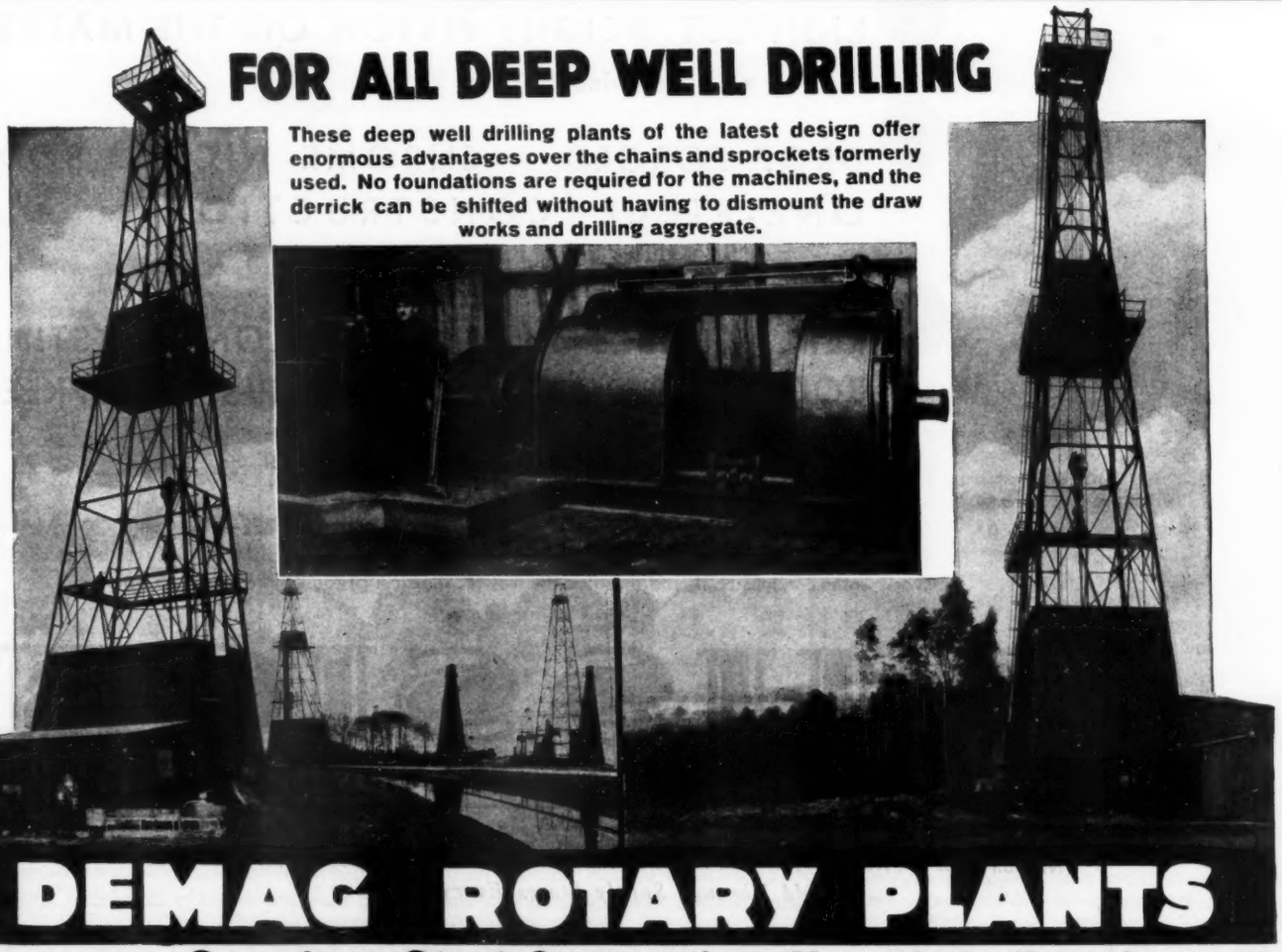


Fig. 3—Correlation of C.F.R. engine, physical-chemical and chemical-component fuel ignition indices of 25 diesel fuels with the computed combustion shocks produced in a Fairbanks-Morse 4-cycle diesel engine

Bore and stroke, 4¼x6; speed, 1,200 r.p.m.; 10 B.H.P. single-cylinder engine. Data is for 8 B.H.P. at 1,200 r.p.m.

Referring to Table B in Figure 6, it may be noted that large deviations were recorded for fuels 5 and 10 by practically all rating methods. The large deviations are believed to be caused by the high volatility of the ethyl nitrate doped fuel number 5 and the high volatility of fuel number 10 causing fuel losses in handling and testing, and possibly by fuel contamination.

The correlations of Table B show that all five C.F.R. engine rating methods rated the fuels from an average of 0.8 to 3.1 reference fuel numbers lower than the Fairbanks-Morse engine ratings, while the C.F.R. engine ratings were 3.1 to 5.6 reference fuel numbers higher than the Winton combustion shock ratings and 0.0 to 3.2 reference fuel numbers higher than the Winton ignition delay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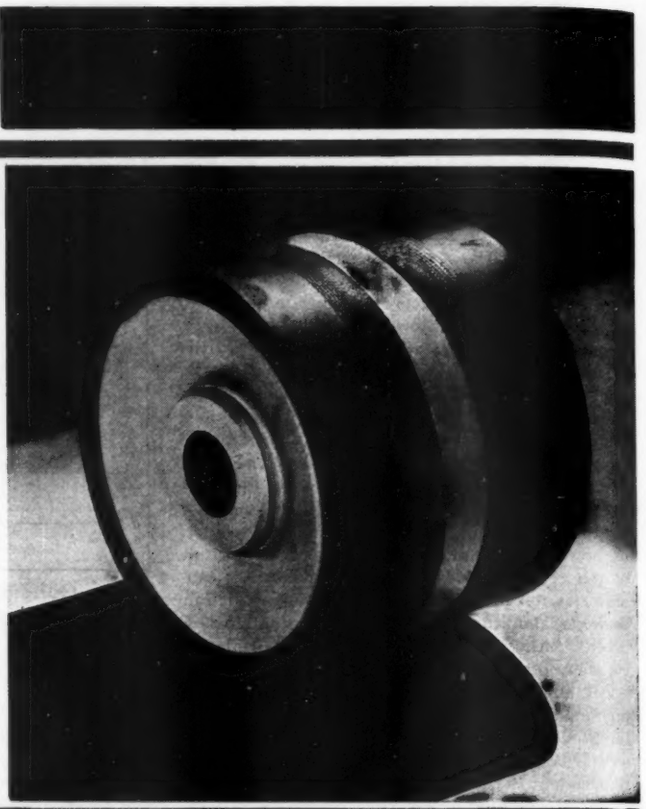

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ratings. Table B also shows that the deviation of all C.F.R. engine fuel rating methods with respect to service engine ratings ranges from 2.8 to 5.7, the average deviation being 4.1 reference fuel number. This is equivalent to an approximately 2.9 cetane number error between laboratory engine ratings and service engine performance.

Table C of Figure 6 indicates that the modified magnetic pick-up rating method has the greatest laboratory accuracy, satisfactory correlation with service engine tests and efficient testing time in comparison with the other methods. This method is superior to the present knockmeter-delay method, but more fuels should be tested by this and other fuel rating methods by a greater number of laboratories and the results correlated with several types of service diesel engines before final conclusions are drawn.

Fuel Performance in Service Diesel Engines

Fuel performance tests in naval diesel engines have consisted of variable load tests at rated speed in all engines and, in addition, of propeller-load and variable fuel pump timing tests in all motor boat engines. Up to 83 different fuels have been tested in one engine, the least number tested in an engine being 10 fuels of selected physical-chemical characteristics and ignition quality range. Many practical fuel performance measurements are being made on each fuel and engine in order to adequately cover the various major service conditions and diesel fuel requirements of the U. S. Navy. These tests are not completed, but the following data have been summarized, usually from one load condition only, for the three types of diesel engines thus far sufficiently tested, to show the correlation of laboratory tests with fuel performance in service engines.

In order to find the relative accuracy of each fuel ignition quality index in Figure 4, those derived from ignition delay, maximum cylinder pressure and computed shock measurements were averaged and the results given in column four. These average relative accuracies have been rearranged from highest to lowest in the "Order of Value" table in Figure 4. It should be noted that the relative value of these 13 fuel ignition quality indices range from 1.000 for the boiling point-gravity constant to only 0.119 for the naphthenic components.

Since the cetane number (Moore), having an order of value of "4," has been succeeded by tests using cetane number and the aniline point index, having an order of value of "6," is included in the more accurate diesel index number, these indices have been dropped from further consideration in fuel performance correlations. Thus, the results of this work indicated that the boiling point-gravity constant, cetane number (CCR), diesel index number, viscosity-gravity constant and cetane number (KM-delay), having average deviations from 8.3 to 12.4, could be used to predict fuel performance in service engines but should be further investigated for correlation with additional fuels and for other types of diesel engines.

Table A. Reference Fuel Numbers Determined by Five C.F.R. Laboratory and Four Service Diesel Engine Methods

Volunteer Group Fuels –	1	2	3	4	5	6	7	8	9	10	11	12
C.C.R. – CFR Engine – Av.of 6 Labs.	77.6	73.8	83.5	60.4	66.6	68.7	60 0	64.7	47.0	86.1	85.4	67.4
K.M. Delay – " – " " 11 "	73.6	74.1	91.5	55.4	73.7	64.0	58.4	58.1	46.6	83.2	84.8	67.2
Penn. State – " – " " 5 "	74.1	72.5	92.2	56.5	74.2	65.4	55.3	60.7	44.2	82.9	79.9	68.2
Socony-Vacuum – " – " " 3 "	77.0	78.0	92.8	58.4	77.6	66.1	60.1	59.3	45.7	85.2	86.5	69.0
Mod.Pick-Up – " – " " 3 "	74.1	71.7	90.7	55.7	76.0	63.9	59.6	60.0	44.7	85.0	82.3	67.7
Critical Alt. – 10 BHP F.N.Eng.– S.O.,Calif.	80.3	81.0	90.5	60.5	81.0	67.0	61.3	61.5	48.3	90.5	88.5	68.2
Ign. Delay – " " – " "	75.3	79.0	93.5	56.8	70.9	64.0	60.5	55.9	47.5	93.0	91.5	70.3
Comb.Shock – 75 BHP Winton – U.S. Navy	69.6	75.0	81.5	49.8	78.2	67.8	55.9	58.2	44.1	69.6	75.0	69.6
Ign. Delay – " " – " "	73.6	65.9	91.6	56.3	81.8	60.4	61.8	54.1	48.3	85.0	87.4	62.1

Table B. Average Correlations and Deviations Between the C.F.R. Laboratory and Service Engine Methods

Volunteer Group Fuels –	1	2	3	4	5	6	7	8	9	10	11	12	Corr.	Dev.
C.C.R. vs F.N.Critical Alt.	-2.7	-7.2	-7.0	-0.1	-14.4	+1.7	-1.3	+1.2	-1.3	-4.4	-3.1	-0.8	-3.1	3.9
K.M. Delay vs F.N. Ign.Delay	-1.7	-4.9	-2.0	-1.4	+2.6	0.0	-2.1	+2.2	-0.9	-9.8	-6.7	-3.1	-2.3	3.1
" vs Wint.Comb. Shock	+4.0	-0.9	+10.0	+5.6	-4.5	+1.2	+2.5	-0.1	+2.5	+13.6	+9.8	-2.4	+3.4	4.8
" vs " Ign. Delay	0.0	+10.2	-0.1	-0.9	-8.1	+3.6	-3.4	+4.0	-.7	-1.8	-2.6	+5.1	+0.4	3.5
Penn.State vs F.N. Ign. Delay	-1.2	-6.5	-1.3	-0.3	+3.3	+1.4	-5.2	+4.8	-3.3	-10.1	-11.6	-2.1	-2.7	4.4
" vs Wint.Comb. Shock	+4.5	-2.5	+10.7	+6.7	-4.0	+2.6	-0.6	+2.5	+0.1	+13.3	+4.9	-1.4	+3.1	4.5
" vs " Ign. Delay	+0.5	+8.6	+0.6	+0.2	-7.6	+5.0	-6.5	+6.6	-4.1	-2.1	-7.5	+6.1	0.0	4.6
Socony-Vac. vs F.N. Ign. Delay	+1.7	-1.0	-0.7	+1.6	+6.7	+2.1	-0.4	+3.4	-1.8	-7.8	-5.0	-1.3	-0.8	2.8
" " vs Wint.Comb. Shock	+7.4	+3.0	+11.3	+8.6	-0.6	+3.3	+4.2	+1.1	+1.6	+15.6	+11.5	-0.6	+5.6	5.7
" " vs " Ign. Delay	+3.4	+14.1	+1.2	+2.1	-4.2	+5.7	-1.7	+5.2	-2.6	+0.2	-0.9	+6.9	+3.2	4.0
Mod.Pick-Up vs F.N. Ign. Delay	-1.2	-7.3	-2.8	-0.9	+5.1	-0.1	-0.9	+4.1	-2.8	-8.0	-9.2	-2.6	-2.2	3.8
" " vs Wint.Comb. Shock	+4.5	-1.3	+9.2	+5.9	-2.2	+1.1	+3.7	+1.8	+0.6	+15.4	+7.3	-1.9	+3.5	4.7
" " vs " Ign. Delay	+0.5	+7.8	-0.9	-0.6	-5.8	+3.5	-2.2	+5.9	-3.6	0.0	-5.1	+5.6	+0.4	3.5

Table C. Deviations, Correlations With Service Engines and Testing Times of C.F.R. Engine Methods

	Number of Laboratories Reporting	Average Laboratory Deviation	Average Service Engine Correlation	Approximate Testing Time
Critical Compression Ratio Method	6	2.3	-3.1	30 Minutes
Knockmeter-Delay Method	11	2.4	+0.5	120 "
Penn.State Magnetic Pick-Up Method	5	2.2	+0.1	15 "
Socony-Vacuum Balanced Diaphragm	3	2.0	+2.7	15 "
Modified Magnetic Pick-Up Method	3	1.4	+0.6	15 "

Fig. 5—Laboratory accuracy of five C.F.R. engine ignition quality test methods and correlation of their fuel ratings with service engine ratings, 1937 volunteer group for compression ignition research fuels

Correlation of Ignition Indices With Fuel Tests

The second service engine equipment installed for diesel fuel testing consisted of a single cylinder, 8x10, 750 r.p.m., two-cycle, open-type combustion chamber, Winton X1-201A diesel engine rated at 75 B.H.P. This engine was equipped with complete speed, load, temperature and pressure controlling devices, a two-element magnetic oscillograph with fuel injector valve-lift contacts, fuel ignition indicator and magnetic flywheel timing coil for determination of the start of injection and of fuel ignition with reference to engine top dead center and thus ignition delay, a high-speed pressure-time cylinder pressure indicator, exhaust smoke recording device and special fuel tanks and supply system for continuous engine operation at constant conditions while testing 20 or more fuels in an eight-hour working day. The engine and equipment have been described in previous reports and publications.[6, 7, 8]

Eighty-three different fuels consisting of 35 undoped and 24 doped series-blended fuels, 6 miscellaneous, 11 secondary reference and 7 cetane or primary reference fuels were analyzed in the chemical laboratory, tested in the C.F.R. engine for critical compression ratio and knockmeter-delay cetane numbers and in the Winton diesel engine at 750 r.p.m. and 75 B.H.P. for ignition delay by means of oscillograph measurements and for combustion rates by meahs of indicator card measurements in short-time tests, and for power and economy, exhaust smoke and temperature, carbonization and gumming and other effects at 750 r.p.m. and several loads in 100-hour fuel performance tests.

Since the schedule of operation in the short-time tests was arranged to determine the ignition delays and computed combustion shocks of six to eight test fuels, six secondary reference fuels and six to eight additional test fuels in succession on the same day, it was only necessary to plot the ignition delays and computed combustion shocks of the reference fuels against their blending percentages and read the test fuel reference fuel numbers from this calibration curve. The cetane numbers of the test fuels were determined by means of a cetane-reference fuel calibration curve obtained by determining the ignition delays and computed combustion shocks of a series of cetane-alpha-methyl-naphthalene blends and Shell secondary reference fuel—alpha-beta-methylnaphthalene blends in the Winton diesel engine on the same test day. This method of determining the cetane numbers

Relative Accuracies

	Relative Accuracy Derived From: Ignition Delay	Maximum Cylinder Pressure	Computed Combustion Shock	Average Relative Accuracy
C.F.R. Engine Indices				
Cetane No. KM Delay	14.2	11.4	11.5	12.4
Cetane No. C.C.R.	11.4	6.5	7.3	8.4
Cetene No. (Moore)	10.8	6.1	9.4	8.7
Blend'g.Octane No.	16.9	13.4	13.0	14.4
Weighted Average:	12.9	8.3	9.8	10.4
Phys.-Chem. Indices				
Aniline Point	11.0	10.7	11.7	11.1
Diesel Index No.	10.7	5.8	9.4	8.6
Vis.- Grav.Const.	12.2	6.6	10.0	9.6
Boilg.Pt.-Grav.Const.	11.4	5.2	8.3	8.3
Spont.Ign.Temp.	15.8	31.7	28.6	25.4
Weighted Average:	12.0	7.8	11.1	10.6
Chem.-Comp. Indices				
Paraffinic Comp.	18.3	16.5	15.3	16.7
Unsaturated Comp.	27.5	25.0	19.5	24.0
Naphthenic Comp.	68.9	59.3	80.0	69.4
Aromatic Comp.	13.9	15.5	14.7	14.7
Weighted Average:	22.6	27.5	20.3	21.7

Order of Value

		Average Relative Accuracy	Relative Value
1.	Boiling Point Gravity Constant	8.3	1.000
2.	Cetane Number(CCR)	8.4	.988
3.	Diesel Index Number	8.6	.965
4.	Cetene Number (Moore)	8.7	.955
5.	Viscosity-Gravity Constant	9.6	.865
6.	Aniline Point	11.1	.747
7.	Cetane Number KM Delay	12.4	.669
8.	Blending Octane Number	14.4	.576
9.	Aromatic Components	14.7	.564
10.	Paraffinic Components	16.7	.497
11.	Unsaturated Components	24.0	.346
12.	Spontaneous Ignition Temp.	25.4	.327
13.	Naphthenic Components	69.4	.119

Fig. 4—Relative accuracies and order of value of 13 fuel ignition indices determined from ignition delay, maximum cylinder pressure and computed combustion shock measurements in a Fairbanks-Morse diesel engine

Bore and stroke, 4¼x6; speed, 1,200 r.p.m.; 10 B.H.P. single-cylinder engine. Data is for 8 B.H.P. at 1,200 r.p.m.

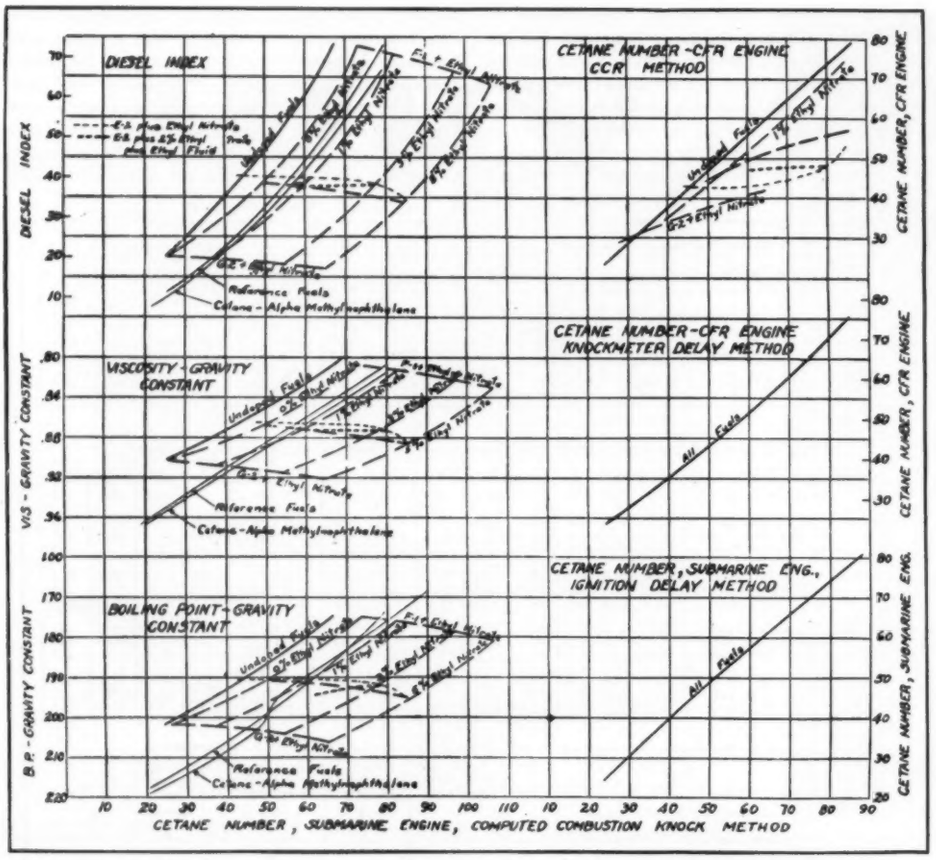

Fig. 6—Correlation of C.F.R. engine and physical-chemical fuel ignition indices of 83 doped and undoped diesel fuels with computed combustion shock cetane numbers determined in a Winton 2-cycle diesel engine

of fuels directly in the Winton diesel engine is described in detail in reference 8.

The ignition quality indices determined for these 83 fuels were diesel index number, viscosity-gravity constant, boiling point-gravity constant, and cetane numbers by the critical compression ratio and knockmeter-delay methods on the C.F.R. engine and the ignition delay and computed combustion shock methods on the Winton diesel engine. The individual correlations of these several indices are given in reference 8. A summary chart of these correlations is given in Figure 5.

While the above five physical-chemical and C.F.R. engine indices were found to have the highest average correlations in the Fairbanks-Morse engine tests on 25 undoped fuels, these tests showed that the three physical-chemical indices and the cetane number by the critical compression ratio method on the C.F.R. engine were unreliable for predicting fuel performance in the case of doped fuels.

Correlating Results

The apparent reasons for these failures of the physical-chemical indices to correlate with service engine performance on doped fuels are that the ignition quality dope decreased the aniline point and the A.P.I. gravity in the case of the diesel index number and increased the specific gravity slightly in the cases of the viscosity-gravity and boiling point-gravity constants. Lesser fuel ignition qualities were thus indicated with fuel doping whereas the service engine tests showed marked and progressive ignition quality increases with fuel doping. The partial failure of the cetane number determination by the critical compression ratio method is attributed to the difference in the engine conditions and combustion of the fuel in the C.F.R. and service engine tests. If the critical compression ratio tests can be considered indicative of fuel starting ability, then a fuel ignition quality dope may increase the ease of starting an engine in cold weather only about one-third as much as it increases the ignition quality of the fuel with reference to ignition delay and combustion shock.

Since the viscosity, distillation range, carbon residue, ash, impurity content and other properties of diesel fuels have been held within close limits through specifications, and refiners have in general supplied clean, uniformly refined fuels for the rapidly growing high-speed diesel engine industry, the major fuel effect is now that of ignition quality. Thus, while other fuel properties definitely influence engine performance and maintenance, the following engine performances are generally shown plotted against fuel ignition quality expressed in cetane numbers determined on the C.F.R. engine by the knockmeter-delay method.

Fairbanks-Morse Auxiliary Engine. Figure 7 shows the idling, acceleration, exhaust smoke and fuel consumption performance of 25 diesel fuels in the Fairbanks-Morse engine. It may be noted that this engine performs best with fuels having high ignition quality, since the lowest idling and 8 B.H.P. fuel consumptions and the least amount of combustion knock during acceleration occurred with fuels of 55 cetane number or more. One exception to this trend was found, that of exhaust smoke in which the least smoke density was found at a cetane number of 30. While it may appear that this curve might be drawn differently, considering the general dispersion of the data, comparisons with the trends shown for smoke ratings plotted against other indices, such as diesel index, indicated that the rapidly decreased exhaust smoke rating near 30 cetane number was correct. The last two charts show that lowest fuel consumptions at 8 B.H.P. are obtained by fuels having viscosities ranging from approximately 2.0 to 4.5 centipoises absolute viscosity, 35 to 43 seconds Saybolt Universal viscosity, and 90 per cent distillation temperatures from approximately 560° to 650° F.

Figure 8 shows the type of indicator cards, maximum cylinder pressures, combustion shocks and fuel consumptions obtained in this engine at 8 B.H.P. for a range of cetane numbers from 30 to 60. The change from smooth to rough combustion and the increases in maximum cylinder pressures, combustion shocks and fuel consumption occurring with fuels having ignition qualities below about 45 cetane number are clearly defined.

Considerations of these fuel effects, Figures 7 and 8, together with other lesser effects of these and of other fuel properties have been of assistance in preparing diesel fuel specifications that will insure satisfactory fuel performance in this type diesel engine.

Buda Motor Boat Engine. Figure 9 shows the type of indicator cards, maximum cylinder pressures, combustion shocks and fuel consumptions obtained in a Buda, type DA (DMR-186), four-cycle, four-cylinder motor boat diesel engine. These data were taken with 10 fuels of selected physical-chemical characteristics and a wide range of ignition quality at 1,200 r.p.m. and 15.74 B.H.P. The general shape of the combustion chamber may be seen in the sketch of Figure 9. The part marked "valve"

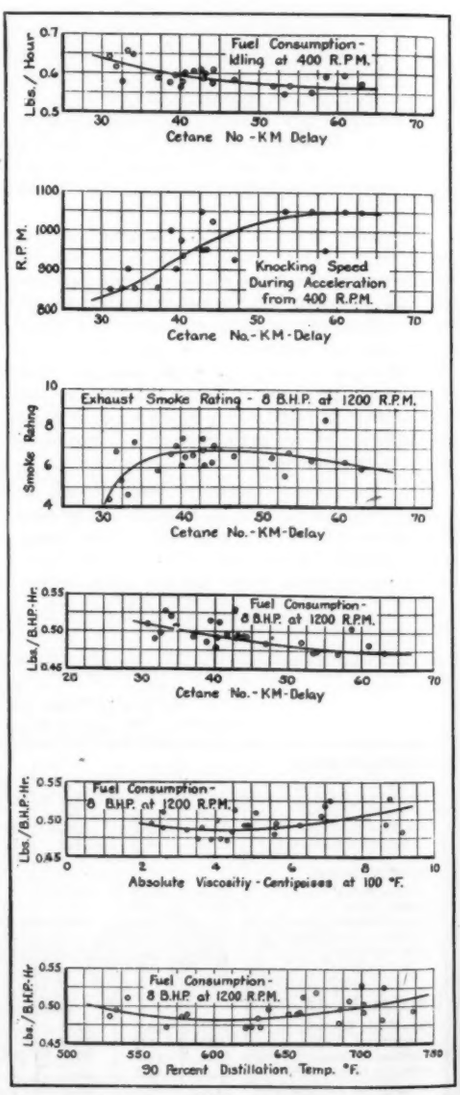
Fuel Consumption - Idling at 400 R.P.M.
Lbs./Hour
Cetane No.-K.M. Delay
R.P.M.
Knocking Speed During Acceleration from 400 R.P.M.
Exhaust Smoke Rating - 8 B.H.P. at 1200 R.P.M.
Smoke Rating
Fuel Consumption - 8 B.H.P. at 1200 R.P.M.
Lbs./B.H.P.-Hr.
Absolute Viscosity - Centipoises at 100 °F.
90 Percent Distillation Temp. °F.

Fig. 7—Idling, acceleration, exhaust smoke and fuel consumption performance versus cetane number, viscosity and distillation temperature of 25 diesel fuels in a Fairbanks-Morse 4-cycle diesel engine

is turned so as to close off the after chamber from the cylinder to increase the compression ratio for starting the engine in cold weather or with low

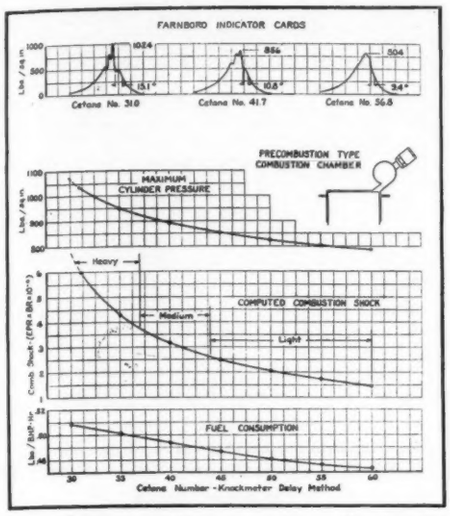

Fig. 8—Fuel performance in a Fairbanks-Morse 4-cycle diesel engine

Single cylinder, 4¼x6, 1,200 r.p.m., 10 B.H.P. engine. Twenty-five diesel fuels tested at 1,200 r.p.m. and 8 B.H.P.

ignition quality fuels. After the engine is started and warmed up, the after chamber valve is turned back to open the after chamber to the cylinder.

Due to the construction of the engine, the Farnboro indicator balanced-diaphragm pressure-unit was attached to the after chamber by means of a special adaptor designed to maintain original volumes, instead of directly into the engine cylinder as in the case of the Fairbanks-Morse auxiliary engine. The maximum cylinder pressures and combustion shocks presented in Figure 9 are thus representative of conditions in the after chamber and are higher than those in the engine cylinder. In addition to the high pressures and combustion shocks sustained in the after chamber, the general operation of the engine as to roughness and fuel knocking was found to be approximately as shown on the "Combustion Shock" curve, the roughness of combustion increasing progressively from high to low cetane number fuels.

Whereas the fuel consumption in the Fairbanks-Morse engine increased from 0.473 lb./B.H.P. hr. at 60 cetane number to 0.508 lb./B.H.P. at 30 cetane number, it was found that the fuel consumption for the Buda motor boat engine was practically constant at 0.510 lb./B.H.P. hr. for the whole cetane number range. While the relative efficiencies of these two engines can not be compared because the load conditions are not comparable in the presented data, the effect of ignition quality on fuel consumption in the case of the one engine and the lack of this effect in the case of the second engine indicates that combustion chamber design can be made to control fuel economies. Although no appreciable ignition quality effect on fuel consumption has been found in this engine, combustion pressures, rough engine operation, nozzle carbonization and sticking, and other factors indicate that approximately the same fuel properties are required for the motor boat engine as for the auxiliary engine.

Winton Submarine-Type Engine. Figure 10 shows the type of indicator cards, maximum cylinder pressures, combustion shocks and fuel consumptions obtained in the Winton, X1-201A, two-cycle diesel engine over a fuel ignition quality range from 25 to 80 cetane number. Eighty-three fuels, including 24 doped fuels were tested for ig-

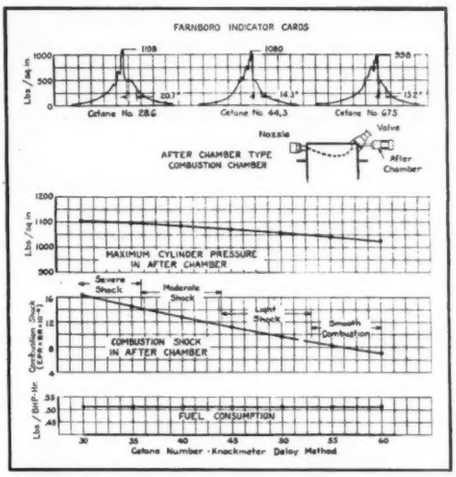

Fig. 9—Fuel performance in a Type DA Buda 4-cycle diesel engine

Four cylinder, 3⅝x4½, 1,400 r.p.m., 25 B.H.P. engine. Ten fuels tested at 1,200 r.p.m. and 15.74 B.H.P.

nition quality during short-time tests and 24 undoped fuels were tested for complete fuel performance during 100-hour tests in this engine. The ignition quality tests were made at 750 r.p.m. and 75 B.H.P. and the 100-hour tests at 750 r.p.m. and six loads.

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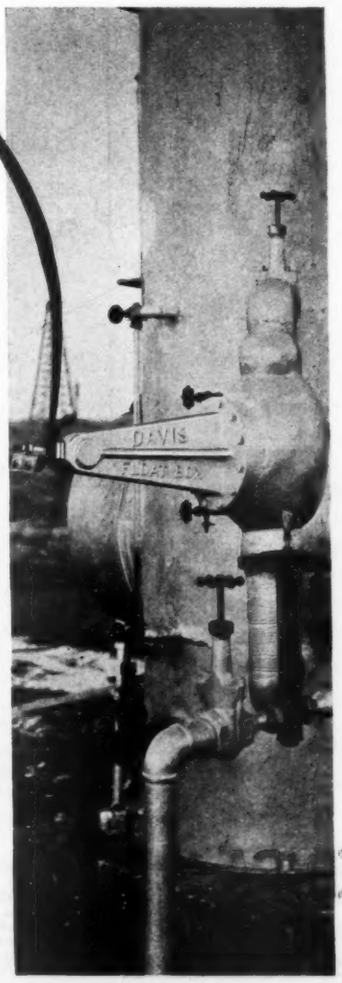

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outstanding characteristic of this engine. Fuel ignition quality has an appreciable effect, however, as shown by the increasing ignition delays, explosion pressure rises and burning rates shown on the indicator cards from 80 to 20 cetane number. This trend is shown also by the curve for computed combustion shock, where the increase in fuel roughness below about 40 cetane number becomes pronounced.

It may be noted that, while the "shock pressures" are increased in intensity at 25 cetane number several times over those at 80 cetane number, the maximum cylinder pressure is increased only about 27 lbs./sq. in. While these tests have shown that maximum cylinder pressures are not increased greatly by low ignition quality fuels in this engine, engine operation and fuel shock below about 30 cetane number become definitely impracticable. The ability of these "shock pressures" to cause damage to engine parts, without equivalent increases in maximum cylinder pressures, has been amply demonstrated in an 18-minute test on 20 per cent secondary reference fuel, equivalent to approximately 14 cetane number, in which the heavy piston pin bosses of the submarine engine were cracked through.[5]

In addition to the increased engine maintenance invited by the use of fuels below about 45 cetane number, the last curve shows a progressive increase in fuel consumption over the whole cetane number range with decreasing ignition quality. Thus, while these data are for engine operation with separately driven scavenge air blower and water pump, which if engine driven would increase the reported fuel consumptions, the combined effects of fuel ignition quality, including nozzle carbonization, gumming

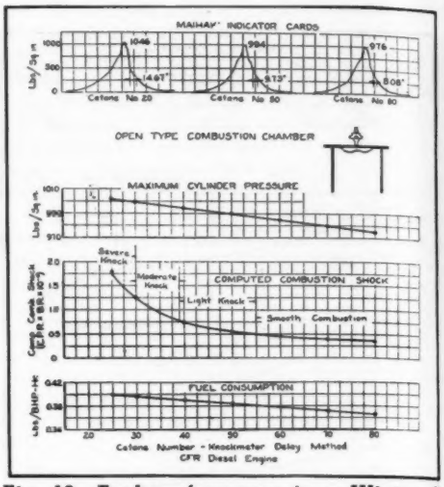

Fig. 10—Fuel performance in a Winton 2-cycle diesel engine

Bore and stroke, 8x10; speed 750 r.p.m.; 75 B.H.P. one-cylinder engine. Data presented are for 83 fuels, including 24 doped fuels, tested at 75 B.H.P. and 750 r.p.m.

of various engine parts and engine wear, indicate that fuels of relatively high cetane number result in best performance and economy in this engine.

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   (2) Annual meeting of the American Society for Testing Materials, New York, June 28 to July 2, 1937.
   (3) Second World Petroleum Congress, Paris, France, June 14 to 19, 1937.

Hydrogen Sulfide Content

(Continued from Page 58)

titration of the 10 cc. of ceric sulfate with standard ferrous reducing solution confirmed it. Due to the fact that the caustic wash for the removal of H_2S would have also removed the lighter weight mercaptans, the above experiments prove only that ceric sulfate is unaffected by the heavier mercaptans under the conditions of the test. The effect (if any) of the lighter weight mercaptans is as yet unknown.

Although these experiments are inconclusive, consolation can be taken from the fact that, under these same conditions, other methods would have introduced large errors due to the calculation of mercaptans as hydrogen sulfide.

References

1. Willard and Young, J. Amer. Chem. Soc., 51, page 149 (1929).
2. Walden, Hammett and Champman, J. Amer. Chem. Soc., 53, 3908 (1931).
3. McAlpine and Soule, Qualitative Chemical Analysis, D. Van Nostrand & Co., New York, page 375.
4. Bureau of Mines Report of Investigations 3135 (1931).

Specify Spang
"HIGHER-STANDARD" CABLE TOOLS
and DRILL
WITHOUT DELAY!

Fig. 516

STEM PIN (Heat-Treated)

Fig. 517

STEM BOX (Heat-Treated)

Delays in cable-tool drilling are frequently caused by the failure of mismatched joints. Specify Spang for the entire string and you'll avoid costly shutdowns. They'll drill more footage and outlast any ordinary "mixture" of tools, because they're strictly "Higher-Standard" Cable Tools.

The HIGHER STANDARD

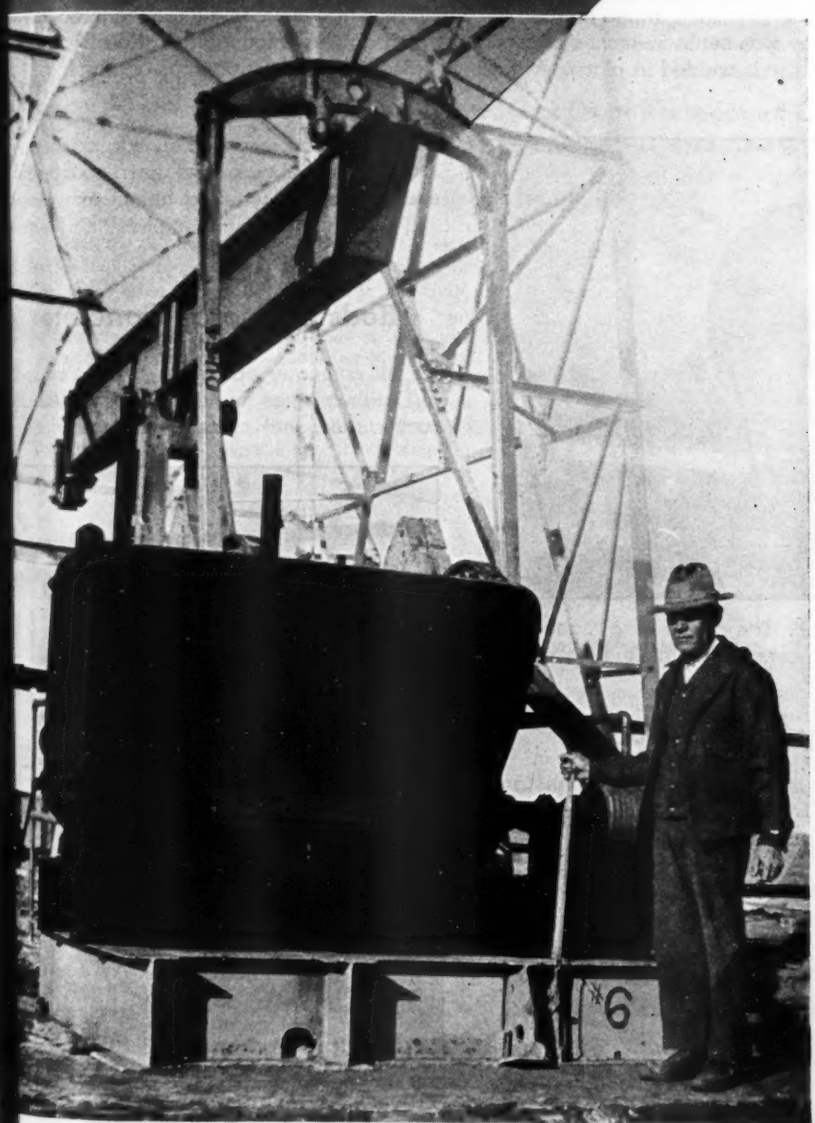
Consult SPANG about any cable-tool problem that arises.

SPANG & COMPANY, BUTLER, PA.

WHEN LIZARDS GO TO THE STEAM LINES TO KEEP COOL

IT'S NEVER TOO HOT

FOR ALLIS-CHALMERS ENGINES



Allis-Chalmers, Model E Power Engine. Four cylinders, 5¼" bore, 6½" stroke. 375 ft. lbs. torque.

Heat and dirt have little effect on the performance of A-C engines because they are properly lubricated and cooled—sealed at every point against dust and dirt. Even air for combustion is washed in oil before going to the cylinders. All impurities are removed from lubricating oil and the oil is delivered under pressure to every moving part. Large water capacity in engine block assures that uniform temperatures throughout the entire engine block are maintained under all conditions.

The Allis-Chalmers power unit shown is pumping a well owned by the Empire Gas & Fuel Co. Of its performance the superintendent, Mr. J. M. Haid, Jal, New Mexico, said, *"The E Motor had been on the 24 hour run since February 4, 1936, pumping a 3300 ft. well with 3" tubing and using ⅞" rods and was still doing a nice job."*

This motor is using or burning sulphur gas from the separator, and the very few motor repairs necessary are as follows: universal on power shaft worn out; blade of the fan came off and went through the radiator, necessitating a new core; three sets of spark plugs, twelve in all; one set of points in magneto, and one water pump shaft, impeller and bushing.

During the hot weather from 100° to 117° with little or no wind, this motor did not show any change in heating and the radiator has never boiled at any time.

Allis-Chalmers power engines are valve in head, have removable, nickel alloy cylinder liners which eliminate costly reboring. All engines are equipped with built-in, full throttling, governor giving positive control of engine at all desired speeds. All Allis-Chalmers power units have as standard factory equipment radiator and fan, oil bath air cleaner, Purolator, full throttling governor, heavy duty disc clutch with housing and belt pulley shaft, fuel tank, hood with removable side plates, and high tension magneto. All controls are conveniently located.

Allis-Chalmers power engines are available in four sizes and eight models.

Model L and LO—550 ft. lbs. torque
Model E and EO—375 ft. lbs. torque
Model E and EO Oil Field Special—375 ft. lbs. torque
Model U—200 ft. lbs. torque
Model W—128 ft. lbs. torque.
Torque given with engine fully equipped.

OPERATING IDEAS

Protects Grass From Oil

Some times it is more essential to promote operating details that satisfy the customer than to increase production. Here is shown

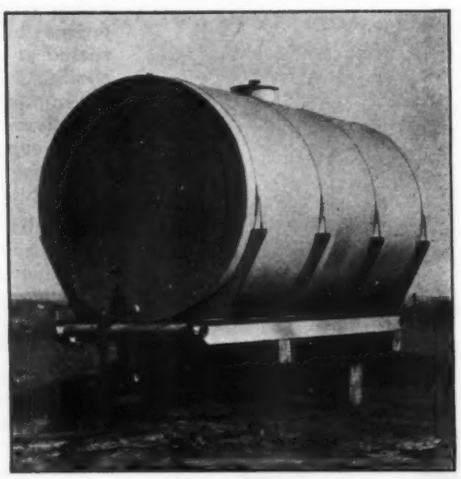
one means for avoiding oil spots on the grass when it is necessary to make deliveries of furnace oil to a tank having its inlet on the lawn. The truck salesman is shown filling the tank after spreading a piece of absorptive paper over the opening of the tank. A small hole in the center of the protective mat is ample to accommodate the nozzle.

Home Fenced With Old Sucker Rods and Tubing

A land owner with producing wells on his small acreage near Sand Springs, Okla., erected the fence shown here from cast-off sucker rods and tubing. The material was first treated to eliminate rust. Holes were then drilled through the 3-inch pipe and the tubing threaded through the pipe. The fence was set in 36 inches of concrete which acts as a foundation and all joints of tubing and rods welded in place. A gate was also constructed from rods and tubing.

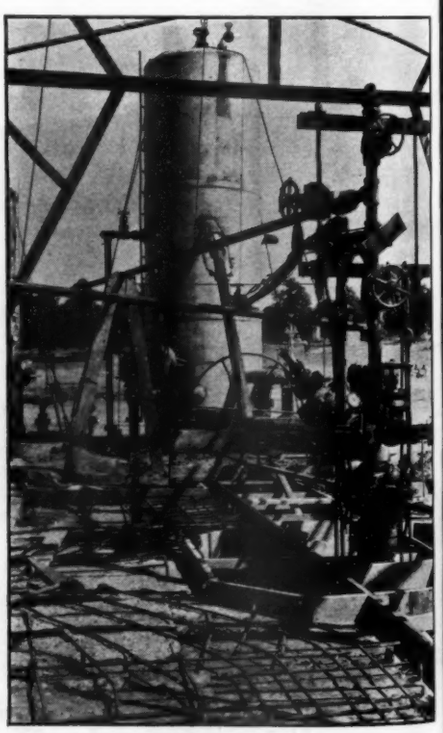
Portable Fuel Tank

An easily moved fuel oil tank may be made by mounting a regular horizontal tank upon a steel cradle, as shown in the accompanying photograph. The cradle is so made that the lower members form skids and the whole assembly can be carried on a truck bed. At location the fuel tank is set down upon heavy timbers to give required height for gravity flow of fuel oil to the engines or boilers.



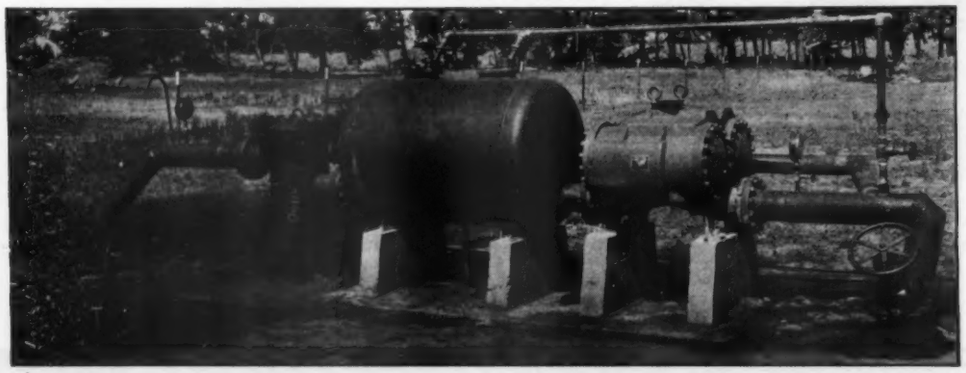
Rods Reinforce Concrete

An oil company operating in the Fox pool of Oklahoma has found a novel use for old sucker rods, that of using the rods for reinforcing concrete foundations and derrick floors. The rods serve to increase the strength of the concrete and to a certain extent, eliminate cracking when under heavy loads.



Oil Meter Hook-up on Main Line for Bypassing Vapors

One problem with which pipe line companies are confronted is to keep vapors accompanying crude oil from causing meters to register incorrectly. The hook-up shown here on the 6-inch intake line of a meter has been devised to correct this error. The oil passes first through a strainer, and from there into a large scrubber where all vapors are allowed to bypass the meter through a small line. The vapors then rejoin the oil on the other side of the meter. This installation has been in operation for about seven months and has always been accurate.



PROBLEMS FROM READERS

Edited by L. G. E. Bignell

Mileage of Crude Oil and Gasoline Pipe Lines

Please give me the most recent information you have as to the miles of petroleum pipe line in the country, separating them if you can between crude oil and gasoline lines—A. T. S.

From the report of the Interstate Commerce Commission, dated December 31, 1935, and issued in September, 1936, we find that there were 39,380 miles of gathering lines and 52,657 miles of trunk lines reporting to the Interstate Commerce Commission during 1935. It states in the report that it has been estimated that of the total line mileage in this country, 80.82 per cent is subject to federal regulation. In other words you would take the figures given above to represent about 80 per cent of the total pipe line mileage in this country.

The report we have does not differentiate between lines carrying different kinds of material, but we have estimated the gasoline line mileage to be approximately 4,800 miles.

It may be of further interest to know it is estimated that it requires about 21,000,000 bbls. of fluid to fill all of the major pipe lines in this country handling crude oil. In addition to this vast volume of oil another 29,000,000 bbls. of oil is carried in lease storage tanks, gathering lines, work tanks along the major pipe lines and for other miscellaneous operating purposes. Out of all the oil aboveground in this country about 50,000,000 bbls. are required to keep the pipe line systems in operating condition and this amount of oil is not available for use unless all stocks are pumped from source to final destinations and the pipe lines emptied.

Electric Coring Device

Will you kindly advise whether the electric coring device is a dependable instrument for finding oil and gas and whether it registers the oil and its thickness and depth?—G. W.

As your question is worded it would seem you have in mind some kind of a geophysical instrument which can be used in detecting the presence of oil and gas before the well is drilled. We know of no such instrument in commercial use at this time.

The electric coring device is lowered into the drilled hole before casing is run and will give data which can be used in determining the resistivity of the formations penetrated, rock porosity, location of faults, direction of dip of strata, electrical anisotrophy of subsurface formations, earth temperatures and the location of water intrusion.

The equipment consists of three insulated wires which are lowered into the hole and to the lower end of each wire is attached an electrode. These wires and electrodes are submerged in the fluid in the hole, mud in most instances, and a current with known characteristics is passed through one electrode and escapes through the mud into the adjacent formations penetrated by the hole.

The drop in potential of this current is measured through the return of the current to the surface instruments after it has been picked up by the two electrodes in the well. In this manner through the evidence obtained relative to the conductivity of the different formations penetrated it is possible to prepare well logs showing accurately the above data.

The thickness of the strata carrying gas, oil or water is recorded and knowing the porosity and productivity, also recorded by this device, it is possible to determine the relative commercial value of the various formations and complete the well accordingly.

This system has proven very reliable and is extensively used in this country and abroad but it must not be mistaken for an "oil finding" device in the broad sense of that term. It will give an accurate log of a drilled hole and record many of the characteristics of the formations penetrated.

Gas From Abandoned Coal Mines

Is there any use for domestic purposes of the gas formed in coal mines which is sealed off in abandoned workings?—G. S.

You failed to give us any description of the mine gas you had in mind and without a chemical analysis there is nothing we can say to answer your problem.

There are several kinds of gas found in coal mines. Some of them are described below.

Carbonic-oxide gas, CO, often called *whitedamp*, is a chemical compound consisting of 1 atom of carbon united to 1 atom of oxygen. To a certain extent it occurs as an occluded gas in coal. It is chiefly formed in coal mines by the slow combustion of carbonaceous matter in the gobs or waste places of the mine where the supply of air is limited. This gas has a specific gravity of .967 and being lighter than air will accumulate near the roof or in the high working places in the mine. It is colorless, odorless and tasteless. It is combustible, burning with a light-blue flame. This gas will support combustion as it is the only mine gas that burns and also supports combustion.

Carbonic-acid gas CO_2 often called *blackdamp* or *chokedamp* is a chemical compound consisting of 1 atom of carbon united to 2 atoms of oxygen. It is heavier than air and has a specific gravity of 1.529. It accumulates near the floor or in low places in the mine. It is always the result of the complete combustion of carbon in a plentiful supply of air and is a product of the breathing of men and animals, burning of lamps, or any other complete combustion.

Sulfureted hydrogen H_2S, or hydrogen sulfide occurs at times as an occluded gas in coal seams, but more often exudes from the strata immediately underlying or overlying those seams. It is generally supposed to be formed by the disintegration of pyrites in the presence of moisture. It is heavier than air, specific gravity 1.1912.

It is a colorless gas having a very disagreeable odor resembling that of rotton eggs and is known to the miners as *stinkdamp*. It is an exceedingly dangerous gas and when mixed with seven times its volume of air it is violently explosive. It is also poisonous when breathed.

Firedamp, is the general term related to any explosive mixture of marsh gas and air although in some localities this term is understood as referring to any mixture of marsh gas and air whatever, whether explosive or otherwise. It is violently explosive when mixed in the proportions of 1 volume of gas to 9.38 volumes of air. The explosion limits are between 1 gas to 13 parts air and 1 gas to 5½ volumes of air.

Afterdamp is the term applied to the gaseous mixture that exists in mine workings after an explosion of gas. The composition of afterdamp is exceedingly variable, and admits of no general analysis that can be applied with certainty to any one explosion. While it is explosive it does not explode often because the air currents in the mine do not furnish sufficient air for complete combustion. It is very poisonous and dangerous and it is not easily detected because lamps burn brightly in this gas.

This covers the principal gases found in coal mines and it will be noted they range through a large variety of characteristics and it is therefore very difficult to give you any answer to your question without further information. However, judging from the above descriptions of these principal gases it would seem there would be little commercial use for any gas that might be removed from an abandoned coal mine.

Hole Full of Water

I have a contract to drill a hole to a certain depth unless "a hole full of water" is encountered before reaching the contract depth. At about 5,000 feet depth in the 8-inch hole sulfur water was encountered and filled the hole to a depth of about 2,325 feet from the bottom and it is impossible to bail this water down so that cable tool work can proceed. It is my contention that under the term of the contract this flow of water constitutes a "hole full of water" as this term is used in the oil fields. Can you give me reference to any legal opinions on a case similar to the one cited?—E. H. G.

We know of no legal decision involving the above points. Consulting with several of the editors of The Oil and Gas Journal we have come to the conclusion this clause means just what it says—"a hole full of water" or a hole that is running over with water.

In making scout reports if water partially fills a hole it is so reported, that is, the depth to which the water rises is reported. This then forms one standard and the term "hole full of water" is not used now to indicate some water in a drilling well.

It therefore seems that it would be difficult for you to prove in court a contention that in a drilling contract "a hole full of water" means striking a heavy flow of water which is difficult to bail down but does not actually flow over the top of the hole and this constitutes fulfillment of your part of the contract. The court would probably rule you still had to drill the well to the required depth and in some way control the flow of water.

Another way to look at the matter is to try to say how small a flow of water would be construed as a "hole full" if some water in the hole means "a hole full of water." In some instances it is possible to conceive of a contractor desiring to complete his contract and claiming he had a "hole full of water" when he had a small quantity of water flowing into the well. Therefore unless the term is interpreted literally and taken to mean a hole full of water there would be no limits to the range of quantities of water entering a hole which might be claimed as constituting a "hole full of water."

QUESTIONS ON TECHNOLOGY

By Charles K. Francis, Ph.D., Technical Editor

Modified Ostwald Viscosimeter for Kinematic Viscosity Determination

In recent issues of The Oil and Gas Jounal I have noted increasing references to kinematic viscosity, which it has been stated, would eventually replace the Saybolt method for measuring viscosity of lubricating oils. What is kinematic viscosity and how are the tests made? Is there any method for converting kinematic viscosity to Saybolt terms?—E. L. B.

Kinematic viscosity is the true or absolute viscosity. Kinematics, from the Greek word meaning motion, is that division of physics which considers motion apart from other factors.

A previous reference to the determination of kinematic viscosity was made on this page in the issue of June 3, 1937. The instrument there mentioned was the suspended level viscosimeter of Ubbelhode. Another method based on the use of the modified Ostwald viscosimeter, originally described in The Oil and Gas Journal by Cannon and Fenske, has been arranged by the American Society For Testing Materials as a proposed method for viscosity.

The apparatus includes viscosimeters, both, thermometers and timer. The gas viscosimeters are inexpensive, made in sets of four to conveniently cover the range of viscosities found for most oils. The approximate viscosities of the instruments are given in the table.

Viscosimeter No.	Efflux time seconds	Approx. viscosity—Centistokes	Approx. viscosity—Saybolt Univ. seconds
100	200-700	3- 10	35- 65
200	100-700	10- 70	60- 325
300	100-700	25-175	120- 800
400	100-700	120-850	550-4000

The proper viscosimeter, according to this table, clean and dry, is charged with clean oil by suction through the capillary arm until both bulbs are filled. Excess oil is removed, the instrument immersed in the bath to within 5 cm. of the top and set in a vertical position. During the heating stage, to either 100° F. or 210° F., the oil will drain into the lower reservoir. After 10 minutes apply suction to capillary arm to draw the oil above the mark between the bulbs. Then release the suction and record the time for the meniscus to pass from the upper to the lower mark.

The viscosity, centistokes, may be obtained by multiplying the efflux time by the viscosimeter constant. The formula is:

$$V = Ct$$

where V = kinematic viscosity in centistokes,
t = efflux time in seconds,
C = determined calibration constant.

Calibration may be made from oil standards or the constant obtained by means of a master viscosimeter. Details are given in the references.

Conversion of kinematic to Saybolt Universal values have been arranged by the A.S.T.M. A few examples are given in the table.

At 100° F. Centistokes	Saybolt	At 210° F. Centistokes	Saybolt
10	58 8	10	59 2
20	97 6	20	98 6
50	231 2	50	233 8
70	322 7	70	326 0
90	414 4	90	419 1
100	460 4	100	465 6

Values above 100 centistokes at 100° F. may be estimated from: Saybolt seconds = centistokes × 4.604; or for 210° F. from — Saybolt seconds = centistokes × 4.656.

References: M. R. Cannon and M. R. Fenske, Viscosity Standardization of Petroleum Lubricating Fractions, The Oil and Gas Journal, April 11, 1935, page 52. Same authors, Simple Viscometers and Auxiliary Equipment for the Accurate Measurement of Viscosity in Fundamental Units, same, April 9, 1936, page 45. A.S.T.M. Standards on Petroleum Products, 1936, pages 10-21.

Preparation of Activated Earths for Filtering Oils

The writer would be glad to have some information regarding the so-called "acid sprayed clays" for filtering oils. What acids are used and how are they applied? What particular benefit is secured by their use? C. C. R.

The treatment of filtering earths with acid for improving the decolorizing power, while not a new idea, has attracted much attention. The process as developed in California was the result of failure to find suitable deposits of fullers earth in that state. The high delivery cost from the eastern deposits made it desirable that some other medium than fullers earth should be found for decolorizing the western oils. There were large deposits of earths, chiefly aluminum silicates in California which responded to chemical treatment; several of these are now extensively used in the petroleum industry for the refining of lubricating oil stocks.

The method for purifying the earth is to treat the material with acid then wash it with water and finally dry before grinding to the desired size. Sulfuric is commonly used in strengths between 10 and 20 per cent. Some operators prefer to activate the earth with hydrochloric acid. The purpose of the acid treatment is to remove impurities and change the molecular composition to improve the color removing power of the earth. The explanation is that these earths contain alkaline metals combined with oxygen, which are converted to OH groups and salts by the action of the acid. Washing out these products with water causes the formation of very small cells which have a high adsorptive power. The cellular structure is essential for the decolorizing action. The application of even an alkaline wash will ruin an activated earth, but the addition of acid appears to do no damage.

The term contact process has been applied to the method for treating oils, because of the intimate contact resulting when the fine particles of the activated clay are mixed with the oil by agitation. The earth, usually reduced to 200 mesh or finer, is added to the oil after it has been treated with acid. The temperature is held at 300 to 400° F. with air excluded.

When the desired color has been obtained the earth is removed by filtration through a filter press.

CHEMICALS FOR THE PETROLEUM INDUSTRY

Anhydrous Ammonia

Use—Reduction corrosion, treating, refrigeration.

Form—Liquid, under pressure.

Formula—NH_3.

Molecular weight—17.03.

Specific gravity, liquid at 5° F./60° F. 0.66

Boiling point °F. ..... minus 28

Limitations

Ammonia, per cent, min. 99.95

Moisture—

Less than 0.01 ml. per 100 ml. anhydrous

Residue on evaporation, max.—

1 part in 6,000 by wt.

Pyridine, max. ..... none

Manufacture of Hydrochloric Acid and Use of Salt Cake

Please outline commonest method for the manufacture of hydrochloric acid. What use is made of the by-product salt cake?—R. Y. S.

The method now used for the manufacture of hydrochloric acid is one of the oldest known to chemistry. It is based on the action of sulfuric acid on salt. Hydrochloric acid (HCl) is a gas which is dissolved in water to produce the liquid known as hydrochloric acid in commerce.

There are two reactions involved, the first being represented by

$$\underset{\text{salt}}{NaCl} + \underset{\substack{\text{sulfuric}\\\text{acid}}}{H_2SO_4} \rightarrow \underset{\substack{\text{acid sodium}\\\text{sulfate}}}{NaHSO_4} + \underset{\substack{\text{hydrochloric}\\\text{acid}}}{HCl}$$

The salt is treated with sulfuric acid in a furnace, or retort, from which the HCl gas is conducted to absorbing towers, where it comes in contact with water. The residue $NaHSO_4$ is heated to redness with an additional lot of salt, or any salt remaining from the first step, to produce more acid, explained by

$$NaHSO_4 + NaCl \rightarrow \underset{\text{salt cake}}{Na_2SO_4} + HCl$$

Another process is based on a mixture of sulfur dioxide, air and steam which is passed over salt.

$$4\,NaCl + SO_2 + O_2 + H_2O \rightarrow Na_2SO_4 + 4\,HCl$$

There are numerous uses for sodium sulfate (salt cake) and sodium sulfate crystals (Glauber's salt), in the industries. Salt cake in the manufacture of glass, glazes, paper, soap, dyestaffs, being examples. Glauber's salt is used in medicine, leather treating, making Prussian blue, printing inks, freezing mixtures and for making many of the same products as the salt cake form. Glauber's salt is usually the crystals of sodium sulfate containing 7 to 10 molecules of water.

Questions on Petroleum Technology may be sent to Dr. Charles K. Francis, The Oil and Gas Journal, Tulsa, Okla. When a copy of the answer is desired postage should be enclosed.

SERVICE ON NEW FIELDS

TEN SECTION FIELD, KERN COUNTY, CALIFORNIA

Compiled by The Oil and Gas Journal, August 9, 1937

Approved name:

Ten Section. So named because acreage in lease formed a part of 10 sections of land held in area by Kern County Land Co. During early period of exploration the area was designated as the Stevens district.

Geographic location:

The field is located out in the center of the San Joaquin Basin in Kern County about 11 miles southwest of the Fruitvale field and 5 miles east of the Elk Hills oil and gas field.

Principal towns and cities nearby:

The city of Bakersfield is about 13 miles northeast of the field and the town of Taft is approximately 17 miles southwest.

Power:

Natural gas is used as fuel.

Geological data:

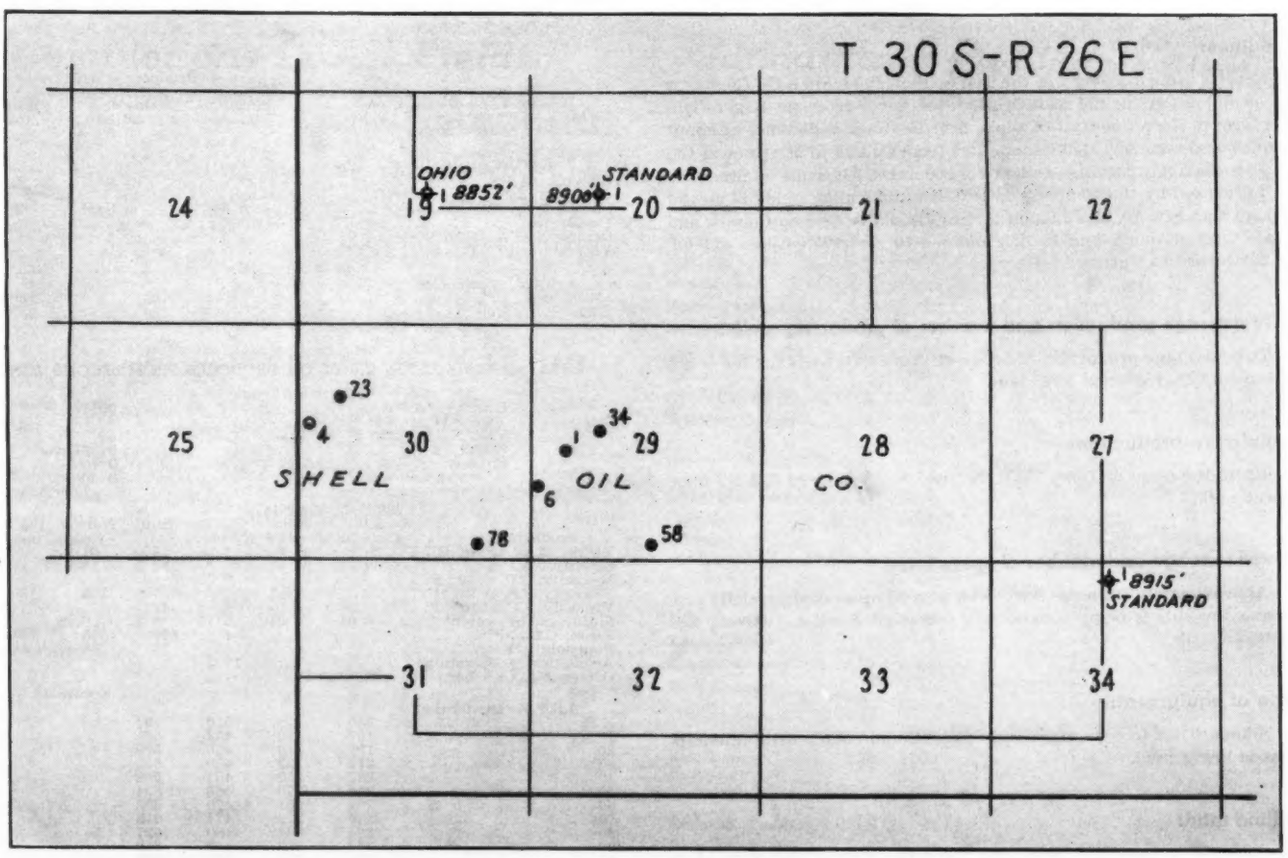
Believed to be a normal anticline with possibility of some faulting. Production is coming from formations of Miocene age, which have been found highly productive in other similar areas. Top of the Miocene was logged in the discovery well at about 6,900 feet and top of the oil sand at 7,800 feet. The existence of a probable buried structure in the Ten Section district was indicated by reflection seismograph and development to date indicates that the probable productive acreage closely approximates seismograph readings.

Development of field:

The Ten Section field was discovered by Shell Oil Co., June 2, 1936. The discovery well, No. 1 Kern County Land in section 29-30-26, was completed flowing 800 bbls. of exceptionally clean 61.4-gravity oil and 12,450,000 feet of gas daily through a 34/64-inch bean from 7,888 feet. The hole was finished with 108 feet of 4¾-inch liner including 88 feet of perforated and has 40 feet of surface pipe and a 7-inch water string cemented at 7,800 feet. The discovery well was subsequently recompleted flowing 3,864 bbls. of 33.1-gravity oil and 3,390,000 feet of gas per day from 8,240 feet in a zone discovered by Shell Oil Co. No. 6-A Kern County Land in section 29-30-26. The latter well was completed flowing 1,600 bbls. of clean 34.3-gravity oil and 1,200,000 feet of gas per day from 8,385 feet on October 29, 1936.

Ownership and spacing program:

Shell Oil Co. holds under lease from Kern County Land Co. all of the potentially productive acreage and because of the absence of outside interference will be able to determine the most advantageous well spacing and effect maximum recovery by application of approved engineer-



Ten Section field, Kern County, California

SERVICE ON NEW FIELDS

ing principles. Several dry holes have been drilled on acreage surrounding Shell's property. These dusters include Ohio Oil Co. No. 1-E Kern County Land in section 19-30-26, abandoned at 8,852 feet, and No. 2-E Kern County Land in section 6-30-26, abandoned at 8,768 feet; No. 1 Kern County Land of Signal Oil Co., in section 21-30-27, at 8,502 feet, and Nos. 9-1 and 10-1 Kern County Land of Standard Oil Co. in sections 34-30-26 and 20-30-26, respectively. No. 9-1 was abandoned at 8,915 feet and No. 10-1 at 8,900 feet. No. 1 Kern County Land in section 11-30-26, a joint test of Superior Oil Co. and Union Oil Co., a few miles northeast of proved acreage, was carried down to 12,618 feet and abandoned as a dry hole.

Drilling and completion methods:

Shell Oil Co. has adopted a drilling program which calls for the landing of approximately 50 feet of either 18-inch or 20-inch and 1,000 feet of 13⅜-inch. A 7-inch water string is usually landed on top of the sand around 7,800 feet and the well brought in through a 4½-inch perforated liner.

Gas-oil ratios and surface pressures:

Shell No. 1-A Kern County Land demonstrated the presence of a gas cap in the first interval, but the lower portion of this interval is open in No. 78-29-A Kern County Land and shows a low gas-oil ratio. Surface pressures approximate 1,250 pounds on tubing and 1,400 pounds on the casing.

Sand thickness:

Oil sand averages about 300 feet in thickness on top of the structure.

Pipe lines:

Shortly after discovery of the Ten Section field, Shell Oil Co. laid a new combination 10- and 12-inch pipe line north from its Bakersfield tank farm in Kern County to Caliola, near Coalinga, a distance of about 44 miles, and reconstructed its pipe line from Caliola to Martinez in the San Francisco Bay region, a distance of 260 miles. All crude oil produced and purchased by the company in San Joaquin Valley fields is moved through this new 10- and 12-inch line to Caliola in Fresno County and thence through one 8- and 10-inch and one 10- and 12-inch line extending northward to Martinez refinery.

Daily average production and number of producing wells:

Daily average production of crude oil from five wells for the week ending July 25, 1937, was 2,725 bbls.

Cumulative production:

Up to the close of June, 1937, the field had produced 532,387 bbls. of crude oil.

Proved acreage and number of operations:

Approximately 800 acres have been proved up as commercially productive, but this is being consistently increased. Shell is running two strings of tools.

Type of equipment:

Standard 122-foot derricks and conventional rotary drilling equipment is being used.

Drilling mud:

The mud is carefully tested and the drilling fluid, therefore, does not present any unusual problems. Average 80-pound mud is being used.

Completions to date:

Six excellent wells have been completed as commercial producers, all by Shell Oil Co.

Gravity of oil:

Crude oil from the second zone in the Ten Section field tests 33.1 degrees A.P.I. gravity; color, black. Crude oil from the upper horizon tests 61.4 degrees A.P.I. gravity and is straw colored.

ANALYSIS OF TEN SECTION CRUDE OIL PRODUCED FROM FIRST ZONE

Properties of crude oil:	
Gravity, °A.P.I.	61.4
Sulfur, % by wt.	0.04
Color, A.S.T.M.	1
R.V.P., lbs./sq. in at 100° F.	14.0
A.S.T.M. Distillation	
I.B.P., °F.	88
10%	135
20	168
30	194
40	220
50	242
60	271
70	309
80	372
90	484
95	...
E.P., °F.	592
% Rec.	95.0
% at 350° F.	77.0
% at 400° F.	82.5

Podbielniak Analysis—	Volume, %
Ethane	0.1
Propane	2.0
Isobutane	1.8
N-Butane	5.8
Isopentane	4.4
N-Pentane	5.5
Heavier	80.4
Total	100.0

	Products of B.T.D.		
Badger Type Distillation:	350°F. S/R Gasoline	400°F. S/R Gasoline	Bottoms
Yield, % of crude charged	76.85	83.16	11.25
Loss, % of crude charged	.....	5.59	.....
Properties of Products:			
Gravity, °A.P.I.	63.6	61.8	34.3
Color, Saybolt	30	30	...
Sulfur, % by wt.	0.02	0.02	0.32
Doctor test	Neg.	Neg.	.....
Octane No., A.S.T.M.	65.2	62.5	...
Vis., S.U. at 100° F., sec.	....	....	40
A.S.T.M. Distillation:			
I.B.P., °F.		105	108
E.P., °F.		348	395

ANALYSIS TEN SECTION CRUDE OIL PRODUCED FROM SECOND ZONE

Tests on Crude	
Gravity, °A.P.I.	35.7
Visc. S.U. at 100° F.	43
Visc. S.U. at 130° F.	38
Sulfur, %	0.35
B.S.&W., %	0.10
% water and loss	0.40

Products:	330 E.P. S.R. gasoline	398 E.P. S.R. gasoline	Kerosene	Stove oil	Normal resid.	125 visc. fuel oil
Yields, % of crude, B.T.D.	29.1	37.2	12.3	16.9	31.9	33.2
Gravity, °A.P.I.	60.0	55.9	38.3	32.2	16.9	17.4
Viscosity, C.P. at 68° F.	....	....	2.53	....	...	...
Viscosity, S.F. at 122° F.	....	....	....	....	163	126
Viscosity, S.U. at 100° F.	....	....	....	47	...	...
Sulfur, % by weight	0.01	0.01	0.10	0.32	0.69	...
Flash, C.C., °F.	....	....	204	270	395	370
Pourpoint, °F.	....	....	....	35	90	85
Aromatics, % by volume	....	....	17.2	....	....	....
Octane No. (A.S.T.M.)	63	58	....	....	....	....
A.S.T.M. Distillation:						
E.P.	330	398	510	704	...	...
10%	167	180	452	571	...	...
20	192	210	456	579	...	...
30	212	232	459	583	...	...
40	227	250	462	588	...	...
50	240	270	466	594	...	...
60	254	291	470	603	...	...
70	269	312	474	616	...	...
80	284	334	480	627	...	...
90	302	362	492	648	...	...
95	316	378	502	663	...	...
I.B.P., °F.	107	110	440	548	...	...
% recovered	99.0	98.0	98.0	99.0	...	...

FIELD OPERATIONS

Summarizing the Week's Developments

KANSAS

A new oil area was opened in northeastern Woodson County, Kansas, the Sperling pool of Harvey County was extended northward and the first Kansas City lime production was uncovered in South Breford pool, Barton and Ellsworth counties. An oil pool opener was completed in Greenwood County, and a gas pool opener in Grant County. Sixteen new operations were reported in Grant County, a record number for that far western area. An 8,252-barrel well was completed in Theede district, Rice County.

OKLAHOMA

A wildcat in Grant County, northern Oklahoma, showed oil on drill stem test and indicated opening of a Wilcox sand pool. Wildcats on which operators have been working for nearly two years were completed, opening small pools in Love and Coal counties. A new Wilcox sand area has been opened in Okmulgee County.

TEXAS

The Opelika test in Henderson County, eastern Texas, which has been closely watched by operators everywhere, is a great disappointment. It flowed an ocean of salt water from the Lower Glen Rose sand and has put a damper on the Opelika area where over $1,000,000 has been invested in leases. Continental Oil Company's new well in Gaines County, West Texas, starting at 195 barrels an hour emphasizes the importance of the Wasson area. A mile due south of the Continental well is another testing 25 to 30 barrels per hour. A wildcat in Yoakum County 15 miles north of the Wasson pool shows saturated lime and has good prospects of being a producer. An extension test 1½ miles northwest of the Duggan pool in Cochran County, flowed 186 barrels in six hours. In West Central Texas an extension well in the Rotan pool flowed 1,651 barrels in six hours through open tubing. Three new pools appear to be in the making in the Fault Zone area in Caldwell and Guadalupe counties. In the Texas Coastal district the Hastings field in Brazoria County and the Heyser field in Calhoun and Victoria counties were extended and two extension tests in the Palacios field in Matagorda County are in process of completion. On the Louisiana side the Texas Company opened the fourth oil field on the Gulf Coast below 10,000 feet in depth. The new pool is in St. Marys Parish, and the discovery well is good for 1,152 barrels per day at 10,863-73 feet.

TEX-LA-ARK AREA

Important extensions were made to the Lisbon field in Claiborne Parish, Louisiana. Five wells were in the pay in the Miller County, Arkansas, extension to the Rodessa field, and all looked like good producers. The ninth producer in the Schuler pool in Union County, Arkansas, started at 60 barrels per hour.

ROCKY MOUNTAIN AREA

In Colorado a wildcat in Kiowa County, northeastern Colorado, showed a heavy gas pressure from Permian lime. In Wyoming two important near completions are reported in Carbon County wildcats expected to make gas wells. An estimated 1,600-barrel well in Tensleep sand in Salt Creek is important. In Montana a 500-barrel well in Sunburst sand in the Cut Bank field is interesting because the Sunburst seldom produces in that field.

Completions in All Fields

(Week Ending August 14, 1937)

	Oil	Gas	Dry	Total	1937 total comp. to date	1936 total comp. to date
N. Y., Pa., W. Va.	82	14	6	102	2,585	1,975
Ohio	5	11	6	22	717	457
Indiana	7	6	2	15	64	114
Kentucky	5	4	3	12	318	151
Illinois	3	0	3	6	65	23
Michigan	10	0	4	14	508	437
Kansas	47	3	14	64	1,580	1,004
Oklahoma	22	1	13	36	1,760	1,641
Texas:						
North Central Texas	25	2	17	44	1,760	1,686
West Texas	50	0	6	56	1,682	907
Texas Panhandle	16	0	0	16	448	416
East Texas	36	0	4	40	1,393	1,725
East Central Texas	15	1	2	18	433	189
East Texas Border	4	0	0	4	240	48
Gulf Coast Texas	32	1	9	42	937	741
Southwest Texas	35	0	12	47	2,035	1,707
Total Texas	213	4	50	267	8,928	7,419
North Louisiana	8	6	3	17	390	422
Gulf Coast Louisiana	3	1	2	6	285	267
Total Louisiana	11	7	5	23	675	689
Arkansas	1	0	1	2	83	58
Montana	3	3	1	7	128	137
Wyoming	4	0	3	7	68	62
Colorado	0	0	0	0	8	17
New Mexico	11	1	3	15	468	351
Utah	0	1	0	1	2	5
California	16	0	5	21	936	699
Total United States	440	55	119	614	18,893	15,189
Total previous week	456	44	129	629		
Difference	16	11	10	15		

Outstanding Fields—Highlights

(Week Ending August 14, 1937)

FIELD—	Rigs up	Wells drlg.	Weekly oil completions	Initial prod.	Total No. oil wells	Daily av. prod.
TEXAS						
Amelia	3	8	4	2,150	74	4,575
Hastings	8	25	9	5,010	270	15,500
McCampbell	4	14	1	65	39	3,020
North Sweden	3	10	4	740	32	3,175
Saxet	8	28	7	1,230	518	40,500
East Texas	47	117	36	1,395	23,305	475,397
Talco	3	39	3	717	423	34,400
Ector County	6	50	8	9,383	558	23,000
Winkler County	4	27	14	13,775	1,364	44,150
OKLAHOMA						
Oklahoma City	0	6	0	0	1,132	157,200
Fitts	7	33	3	1,337	841	98,725
Billings	1	7	0	0	42	7,250
KANSAS						
Ellis County	10	48	6	10,224	161	8,740
Reno County	4	17	1	613	466	17,830
Russell County	15	58	13	6,777	806	34,490
Rice County	7	42	10	5,695	945	47,410
NEW MEXICO						
Lea County	32	104	9	1,235	2,260	112,050
LA-TEX-ARK						
Rodessa, La.-Ark.	5	24	1	754	402	50,490
Rodessa, Texas	3	22	4	922	331	38,415
Lisbon, La.	9	24	5	4,560	68	12,915
Jennings, La.	1	14	0	0	63	8,225
MICHIGAN						
Buckeye	12	73	4	800	193	15,990

Michigan Field Report

By
O. C. PRESSPRICH

BUCKEYE TOWNSHIP OUTPUT ALMOST DOUBLE NEXT BEST

SAGINAW, Mich., Aug. 16.—As Buckeye Township's leadership among Michigan oil pools mounted to almost double the daily output of the next biggest Michigan producer, operators continued successful tests in proved and semiproved territory within the field, while cautious wildcatting was evident at remote corners of Gladwin County, removed from Buckeye Township by some 10 miles.

One definitely wildcat test at a far outpost in Gladwin County, some 10 miles from the Buckeye's north (Wicklund) pool, provel a disappointment. It was the Bell & Marx and Union Oil & Gas Co. No. 1 Steele, NW NW SE section 22, Clement Township. The well was plugged and abandoned after it hit water in the Dundee 21 feet in the pay. The well was one of the efforts operators were making to prove up a pay field in other parts of Gladwin County. While formations were reported as regular, the elusive pool believed to exist in that territory was not tapped.

The other wildcat effort in an isolated location in Gladwin County far away from Buckeye's prolific field was Harold J. Hand's No. 1 Hoyt-Smart, NE NE NW section 29, Bentley Township. The well was drilling at 2,000 feet with formations regular and elevations reported at approximately the same levels as in Buckeye. This wildcat is about 10 miles southeast of the south (Oard) pool in Buckeye Township. Operators declare it to be an interesting test, and say that if it is successful it will cause a flurry of wildcatting in the southeastern part of the county.

Wells developed during the past week in Buckeye proved little not already known about the field, due to lack of edge tests. The field apparently has settled down to expansion of proved territory for a time.

George G. Hanners, discoverer of the midway field with his "tattle-tale" Armstrong No. 1 well in section 23, Buckeye Township, was scheduled to bring in any day his No. 2 well, a southern offset. Favorable indications were reported. Success with the No. 2 well will definitely establish the midway field as pay territory. A north offset of the Hanners No. 1 proved dry for Beaver Trust, while Smith Petroleum Co. brought in a 150-bbl. producer as an eastern offset.

Down in the south (Oard) pool, which appears now to claim the midway field as its northern extension due to in-between development, four wells were developed the past week. None was a startling producer, but all bear promise of paying production.

Clark & Johnson developed the eighth well on their McMahon lease to complete their series of successful wells. The latest, No. 8 in SW SE SE section 36, is a 350-bbl. producer.

Archie M. Henry, a leader in the development of section 35, brought in his No. 3 Lincoln Life, SE SE SE section 35, as a 150-bbl. well natural. The well may be acidized.

Gordon Oil Co. added another well to its holdings with its No. 4-A State, NE SW NE section 36, which came in naturally at 200 bbls., and was scheduled to be deepened, with acid treatment probably due to follow.

Acid was to be given to Charles Bell No. 1 McMahon, NE NW SW section 25, which came in naturally at 50 bbls. daily. While section 25 was the discovery territory of the south pool, recent wells have not had as high initials as surrounding territory. Geologists point out that the south (Oard) pool has better possibilities as far as gas pressure is concerned in comparison with its northern neighbor, the Wicklund pool, where most of the big producers of the field are located. The south pool is said to have some 600 pounds gas pressure as against about 300 pounds for the Wicklund pool wells.

One of the few winners of the week which proved to be a border test was Rex Oil & Gas Co. No. 1 Woodring, NW SW SE section 23, considered a midway field eastern border test. The well is bounded on the north and west by dry efforts, but developed about 100 bbls. daily.

Eastward from the south (Oard) pool in Billings Township, Gordon Oil Co. No. 1 Ashley, NW NW SW section 4, came into production this week at about 10 bbls. daily. Acid was to be used after the drilling in of the No. 2 Ashley, a direct offset, which was scheduled within a few days. Billings development has been progressing slowly but surely in recent weeks, with several wells due to hit the pay sand soon.

Development in the north (Wicklund) field this week was lax, with interest centering largely on the Oil and Gas Exposition at Mount Pleasant, and apparently slowing operations in all Michigan fields.

The accompanying tabulation shows the number of producing wells in each Michigan field and their daily average production for July:

	Wells	Bbls.
Porter-Yost	430	9,214
Greendale-Chippewa	279	1,937
Geneva-Midland	4	31
Vernon-Leaton-Denver	99	1,775
Sherman-Isabella	28	4,912
Crystal-Montcalm	104	1,418
Hope-Edmore	8	68
Winfield-Montcalm	1	6
Beaverton	24	387
Buckeye	182	17,259
Ogemaw	201	2,250
Clayton-Arenac	22	3,625
Saginaw	58	33
Birch Run	26	95
Dundee-Monroe	2	22
Allegan	13	755
Muskegon	97	231
Totals	1,588	44,018

Gratiot County

From the wildcat jungles of Gratiot County comes word that two more wildcats met sudden death when water was encountered in the Dundee without a trace of oil. Carter Oil Co. No. 1 Hirschman, SE SE NE section 13, Newark Township, and Harry B. Cowdrey No. 1 Devuyst, SE SE SW section 11, North Star Township, were the two dry efforts. The Cowdrey well encountered a good show of gas in the Marshall Stray. The gas was cemented off and the well went down to the Dundee, only to find water.

Isabella County

Pure Oil Co. developed three successful efforts in the Sherman Township field this week. Pure No. 2 George A. Baker, SW SE NW section 33, Sherman Township, came in at 3,667 feet with 300 bbls. naturally, which was increased to 33 bbls. by acid. The No. 1-A Doyle, SE NE SE section 32, Sherman Township, came in as a 185-bbl. producer at 3,645 feet, with acidization scheduled. The same company's No. 3-B McClintic, NW SW SW section 33, Sherman Township, made an initial of 190 bbls. in 11 hours at 3,642 feet.

Midland County

Pure Oil Co. developed a small producer in the Porter field when its No. 11-A Bond, C NE SW section 7, pumped 57 bbls. daily after acid treatment. The well was down 3,432 feet.

Ogemaw County

The West Branch pool rated a favorable addition to the field when Ross & Bernier No. 4 Izworski, SW NE NE section 23, Ogemaw Township, ran a gauge of 325 bbls. daily after acid treatment.

Ogo Oil Co. No. 2 Husted, NE SE NW section 36. West Branch Township, was scheduled for acid after an initial of 25 bbls. daily.

Tuscola County

Tuscola County's current oil exploration, a test on the Dairymple farm in Arbela Township, has encountered difficulties at a depth of 2,115 feet, where the drill found an exceedingly hard limestone formation that has cut drilling progress down to about 1 foot an hour. A minor showing of gas was found in this stratum. Drillers expected to reach the Dundee stratum by the end of the week. The test is about three-fourths of a mile from one put down a year ago, which showed a small quantity of oil, but not enough to be commercially profitable.

Huron County

Huron County's perennial oil exploration has just been completed by the Charles W. Teater Oil Co. of Saginaw, without results. After topping the Dundee limestone at 2,785 feet, the drill penetrated 208 feet of that stratum without finding a trace of oil and then encountered a heavy flow of brine. The casing is being pulled and the well will be plugged and abandoned. The test was made on the Haldane farm in Colfax Township. Charles W. Teater expressed confidence a pay streak eventually will be found in the thick Dundee stratum in Huron County, which is northwest and across Lake Huron from the Petrolia field.

Six Wildcat Efforts Due

Six of the past week's 15 drilling permits issued by the Michigan Conservation Department are for wildcat tests, two in Gladwin County and one each in Allegan, Arenac, Montcalm and Saginaw counties. The other nine permits are for either proved locations or for edge tests designed to add to the proved territory.

The six wildcat tests included are: Pioneer Development Co. No. 1 Commissaris, NW SW NE section 9, Salem Township, Allegan County; Joseph Zucker No. 1 Herbert Reed, SE SE NW section 10, Arenac Township, Arenac County, 3 miles from the nearest previous attempt, which resulted in a dry hole; Mammoth Producing & Refining Co. No. 1 R. Nunn, NW NE NW section 18, Beaverton Township, Gladwin County, 2½ miles west of the nearest hole; Louis Rose No. 1 Burt C. Henderson, NE SE SW section 24, Buckeye Township, Gladwin County, two locations west and one south of a small producer; Ide & Galvin Development Corp. No. 1 Peter Britten, SE SE SE section 1, Richland Township, Montcalm County; Bond Oil Development Co. No. 1 Ralph Schoonmaker, SE NE NE section 1, Lakefield Township, Saginaw County.

Spang, Chalfant and National Supply Consolidation

For some years control of the common stock of Spang, Chalfant & Co., Inc., has been owned by the National Supply Co. of Delaware and the companies have been operated independently. In the interval, much new legislation has been enacted which will result in the two companies paying an undue share of taxes, which in time will materially increase costs.

To adequately meet the situation, the directors of the companies have recommended to their stockholders that they be consolidated. In order that there will be no change in handling the general business, trade relationships or credit policies of Spang, Chalfant after this consolidation, a new Spang, Chalfant company will be chartered to operate as an independent unit. There will be no change in the officers or personnel of the manufacturing or sales departments. The contemplated change is one of corporate set-up and is not a change in operations or management.

Eastern Field Report

By STAFF CORRESPONDENT

BEAVER COUNTY ORISKANY TEST GAUGES 1,500,000 FT.

PITTSBURGH, Pa., Aug. 16.—The test of John T. Galey and others on the Minnie Weigle farm in South Beaver Township, Beaver County, Pennsylvania, was successfully completed as a good gas well in the Oriskany sand. The sand was topped at 4,817½ feet and it was bottomed 6½ feet in that formation at 4,824 feet with a gauge of 1,500,000 feet a day. The shut-in pressure is 1,900 pounds.

This is the second Oriskany producer in Southwest Pennsylvania, the first having been completed by the same operators 1 1/5 miles west on the Charlotte Calvin (William Graham) farm in the same township. Unlike the first Oriskany well, the new test did not show any water in the sand and the sand conditions were better as deep as it was drilled. The well is now being tubed under pressure with a bottom-hole choke set and a line is being laid to take the gas.

An interesting feature of this well as well as those completed in Columbiana County, Ohio, and other regions, is that when the sand is tapped and being drilled the pressure of the tools keeps the sand from freezing but when the tools are out of the hole, the gas volume decreases due to freezing from expansion. In the Calvin well, the bottom-hole choke has successfully kept a back pressure on the sand and avoided freezing at the mouth.

The test of Carnegie Natural Gas Co. on the W. C. Patterson farm on the Burning Spring anticline in Burning Spring district, Wirt County, West Virginia, is still a disappointment. With the top of the Oriskany sand at 4,851 feet, the tools have reached 4,886 feet without any increase in the amount of oil or gas and at 4,884 feet there was some water in the formation. The operators intend to cement off this water and plug back and shoot the top of the Oriskany where there was a showing of 50,000 to 60,000 feet of gas a day and about 2 bbls. of oil. The sand hardened as it deepened so that the samples were reduced to flour. If the shot fails to increase production commercially, the hole will be plugged back to produce the oil in the shales from 2,000 to 2,500 feet where it will make a fair producer.

Twenty-eight operations were completed in the lower Eastern fields during the week of which 6 were dry, 14 gas wells, and 8 producers with an initial production of 50 bbls. a day.

SOUTHEAST OHIO

Eight wells were completed in Southeast Ohio. In Athens County, Charles D. Mosher and others completed No. 14 Lena S. Bean in the NE quarter of section 18, Canaan Township, in the First Cow Run at 143 feet. It produced 2 bbls. the first day after shot. In the SW quarter of section 30, Rome Township, E. Gibson and others completed a test on the S. Copeland farm in the Cow Run sand at 760 feet, gauging 360,000 feet.

In Belmont County, Richland Developing Association completed No. 12 John R. Lochary in the N half of section 25, Richland Township. It was drilled in the Berea sand at 2,071 feet and gauges 195,000 feet.

In Carroll County, Shearer & Harding completed a test on the R. M. George, Sr., farm in the NE quarter of section 31, Fox Township, in the Berea sand at 1,175 feet. It produced 2 bbls. the first day, which was increased to 5 bbls. by shot.

In Licking County, Striker & Armbuster completed No. 9 G. E. Patton in section 6, Perry Township, in the Berea sand at a depth of 658 feet. It produced 7 bbls. the first day after shot.

In Noble County, L. A. Patton drilled No. 11 George Warren in the central part of section 4, Jefferson Township, through the Stray sand to 960 feet. It had a showing of oil and no gas and will not be produced.

In Perry County, Ohio Fuel Gas Co. completed No. 6445 Sunday Creek Coal Co. in the SE quarter of section 19, Monroe Township, in the Clinton sand at a depth of 3,640 feet, gauging 190,000 feet a day.

In Washington County, D. R. Greenlees and others drilled a test on the James Dow farm in the SE quarter of section 21, Aurelius Township, through the Gordon sand to 1,910 feet. The bottom of the sand was at 1,870 feet and it was dry, as well as all shallower formations.

SOUTHWEST PENNSYLVANIA

Completions were few in Southwest Pennsylvania, one gas well, only, being completed. In Freeport Boro, Greene County, Null, Milliken and others completed No. 3 W. P. Hoskinson in the Second Salt sand at 1,926 feet good for 142,000 feet. The Pittsburgh Coal was at 975-80 feet.

In Center Township, Greene County, South Penn Oil Co. has cemented the cave on top of the Nineveh Thirty Foot sand in No. 11 Samuel Harvey and will drill in this week. J. B. Orndoff is drilling No. 2 Mattie I. Scott at 2,750 feet. Carnegie Natural Gas Co. is down 1,942 feet in No. 2 J. H. Orndoff. Union Gasoline & Oil Corp. has reached 1,390 feet after recovering the tools in No. 4 Mabel Bodley. Manufacturers Light & Heat Co. is fishing at 1,817 feet on No. 2 W. L. Fordyce.

In Richhill Township, Greene County, Manufacturers Light & Heat Co. is drilling the O. M. Grinnage test at 2,335 feet. O. I. Dillie has rig up on the J. M. Phillips farm. In Aleppo Township, Burleigh Wright is building the rig for the J. W. Rush test.

In Springhill Township, Greene County, Nelson M. Richard Co. is down 650 feet in No. 1 Rossell Sammons. In Dunkard Township, Convex Glass Co. is drilling at 1,049 feet on the VanVoorhis farm.

In Franklin Township, Greene County, Manufacturers Light & Heat Co. is drilling at 2,950 feet deepening No. 1 C. C. Wood. Waynesburg Home Gas Co. is at 1,870 feet on the Marguerite Grover farm with the Big Injun topped at 1,812 feet and 24,000 feet of gas at 1,812 feet. In Monongahela Township, Greensboro Gas Co. is drilling at 1,770 feet on the Ulery farm.

In Washington County, Manufacturers Light & Heat Co. is spudding on the R. O. McKahan farm in South Starbane Township. In North Strabane Township, McClelland Brothers are drilling at 830 feet on their own property. Robertson Brothers & Co. has a rig standing on the J. B. McBride farm. In Peters Township, Carnegie Natural Gas Co. is drilling at 917 feet on the McMurray farm.

In South Franklin Township, Carnegie Natural Gas Co. is drilling No. 3 M. G. Manon at 2,070 feet. Union Gasoline & Oil Corp. is down 1,985 feet in No. 4 B. F. McClain. Dunn Mar Oil & Gas Co. is drilling No. 3 J. T. Baldwin at 2,120 feet.

In Amwell Township, Carnegie Natural Gas Co. is down 1,193 feet in No. 3 R. M. Carrons. Union Gasoline & Oil Corp. is down 650 feet in No. 7 A. O. Vankirk. Equitable Gas Co. is drilling at 1,032 feet in No. 3 S. E. Reese. Moore-Orrill and others have reached 2,400 feet in No. 4 Martha Hazlett.

In South Franklin Township, Bloom and others have reached 2,624 feet deepening No. 2 Clyde Hinerman. F. K. Fawcett and others are fishing at 1,712 feet on the Tucker heirs farm.

In Washington Township, Greene County, Carnegie Natural Gas Co. has started drilling on the Sadie Connor farm in the Ruff Creek area, north of the producer on the Jacob Johns farm.

Deep Tests

The deep test of Norwood Johnston and others on the James McBurney farm in Mount Pleasant Township, Washington County, has resumed drilling after recovering the tools lost at 6,399 feet. The tools are drilling in the Marcellus shales within about 150 feet of the Onondaga.

In Westmoreland County, Potter Development Co. and William E. Snee and others are drilling at about 7,616 feet on the Indiana Savings & Trust Co. lease in Fairfield Township with no additional gas added to the 240,000 feet in the Onondaga.

On Chestnut Ridge in South Union Township, Fayette County, these operators are drilling No. 2 Summit Hotel. North of this in North Union Township, French, Barker, Fairman, Hunt and others have started drilling No. 2 Louis Vardell, and are surveying a location in Bullskin Township to the north.

In Allegheny County, South Penn Oil Co. and others have reached 3,310 feet on the Christian Z. Schove farm in Hampton Township. In Lawrence County, Carnegie Natural Gas Co. is drilling at 3,200 feet on the W. A. Currie farm in Shenango Township.

WEST VIRGINIA

Five producers were completed in West Virginia.

In Roane County, Reedy Oil & Gas Co. completed No. 2 Maggie Miller in Curtis district in the Salt sand at a depth of 1,810 feet, good for 10 bbls. a day.

In Wetzel County, South Penn Oil Co. completed No. 4 John McElroy in Center district in the Gordon sand at 3,242 feet, good for 10 bbls. a day.

In Wood County this company completed No. 13 L. B. and W. S. Williamson in Union district in the Berea grit at a depth of 2,246 feet, showing for 10 bbls.

In Marshall County, Guy B and A. C. Patterson completed a test on the B. Walker Peterson farm in Liberty district in the Injun sand at a depth of 2,378 feet, good for 4½ bbls. a day.

In Ritchie County, J. W. Jones completed No. 29 West Virginia Oil Co. in Grant district in the Gas sand at 500 feet. It is a small producer good for a half-barrel pumper.

Gas Wells

In Braxton County, Pittsburgh & West Virginia Gas Co. completed the No. 7596 Parkersburg Milling Co. in Birch district at 2,534 feet as a small gas well. Big Lime was at 1,899-1,965 feet; Big Injun, 1,965-2,073 feet; gas, 2,026-40 feet; gas, 2,065 feet.

In Cabell County, Merritts Creek Gas Co. completed the test on the C. H. Thornburg farm in Barboursville district at 3,064 feet. Big lime was at 1,241-1,401 feet; Big Injun, 1,495-1,565 feet; Berea, 2,045-63 feet; Brown shale, 2,740-3,058 feet, with 68,000 feet of gas at 2,740-3,024 feet.

In Calhoun County, Lyle S. Ayers and others completed No. 2 H. G. Brannon in Lee district as a fair gas well at 2,347 feet. Big lime was at 2,229-2,303 feet; Big Injun, 2,303 feet, with 2,750,000 feet of gas before shot at 2,308-43 feet.

In Clay County, Hope Natural Gas Co. drilled No. 7778 Mary Wetherell Estate in Pleasant district in the Berea sand at 1,976 feet and it is dry.

In Monongalia County, J. I. Eddy and others completed a test on the O. P. Michael farm in Clay district in the Big Injun sand at 1,930 feet, gauging 212,000 feet.

In Pleasants County, W. J. Bell drilled a test on the John Markey farm in Union district to 959 feet and it was dry without any sand.

In Ritchie County, P. N. Rinehart deepened No. 9 N. E. Moore in Grant district to the Injun sand at 1,700 feet and it is a gas well gauging 250,000 feet a day. It was a former small producer. In this district, James Elder and others deepened No. 2 I. M. Jackson through the Berea sand to 2,300 feet, where there was a small showing of gas.

In Wetzel County, Pittsburgh & West Virginia Gas Co. completed the test on the B. W. Peterson farm in Grant district at 2,209 feet. The Pittsburgh Coal was at 828 feet; Big Injun, 2,105 feet, with 80,000 feet of gas at 2,122-26 feet and 2,180-82 feet.

In Wayne County, Kentucky West Virginia Gas Co.

(Continued on Page 119)

Southwest Texas District

By
GEORGE WEBER

THREE FAULT ZONE POOLS IN PROSPECT; MORE EXTENSIONS

HOUSTON, Tex., Aug. 16.—Recent discoveries continued to head the list of developments in Southwest Texas during the past week. Besides three new fields indicated for the Fault Zone, a Duval County wildcat shows possibility of bringing in new production, and fields of the Laredo district and Lower Gulf Coast were extended.

As a result of the wildcatting program in the Fault Zone three new fields were apparent this week. Hantho Nelson No. 1 Litton, a wildcat in the Cedar Creek community of Bastrop County, is swabbing oil after flowing for a short period. The test cored saturated chalk from 1,972-2,044 feet and set casing at 2,000 feet. After flowing oil, the hole bridged and a fishing job ensued. The hole is now cleaned, however, and operators are swabbing the well in.

Another area attracting considerable attention in the Fault Zone is the Trammel sector of Caldwell County. There the Lanning & Coffield No. 1 Withers has opened another productive area. Located southwest of the active Branyon field, and north of the Brinkley No. 1 Trammel producer in the Guadalupe College Survey, No. 1 Withers cored the following markers: Top of chalk 1,845 feet, base of chalk 2,155 feet, top of Edwards lime 2,251 feet, total depth, in saturated lime, 2,253 feet. Casing was set at 2,248 feet and the well swabbed and flowed approximately 150 bbls. in 36 hours. It was then shut in.

Guadalupe County shared in the new discoveries in the lime and chalk producing area with a possible oil well. The Mason Altgelt No. 1 Schubert, in the Esnaurizer Survey between Lytton Springs and Somerset, and due north of McQueeny, topped the chalk at 763 feet and is bailing oil. The Taylor marl was topped at 550 feet, higher than any other test drilled in the area.

These three discoveries are expected to accelerate the active development in the Fault Zone counties of Guadalupe, Caldwell and Bastrop. The Branyon field of Caldwell County remains the most active in the district, with drilling operations continuing on three faults in the field. Considerable proven acreage is as yet undrilled.

North Sweden

The most rapidly developing field in Southwest Texas at present is the North Sweden pool of Duval County. After weekly discoveries of new sands, and major extensions, the area of proven production has expanded considerably, and activity of outpost wells and wildcats in the vicinity presage possible further discoveries.

The current development at North Sweden is a 1-mile eastward extension. Woodley Petroleum Co. No. 1 Parr, in the southwest corner of a 100-acre tract in the San Andres grant, cored sand at 4,801-11 feet showing oil. After testing 250 feet of oil in 15 minutes on a drill stem test at 4,790-4,811 feet, the wildcat was carried deeper. It was plugged back from a total depth of 6,010 feet to 4,900 feet where 7-inch casing was set. Casing was perforated at 4,800-10 feet and the well was being washed in for completion at latest reports.

Four producers were added to the field during the week, totaling 740 bbls. per day initial production. This brings the number of producers in the field to 32, with daily average production in excess of 3,100 bbls. Two pipe lines already serve the field, and a third is contemplated.

The most important wildcat drilling in the North Sweden sector at present is the V. L. Blanchard No. 1 Benavides, 1 mile southwest of the town of Benavides. The test is drilling below surface casing.

In the northwest corner of Duval County, a wildcat of the Baltimore Drilling Co. on the Afflerbach lease, Survey 342, is reported to have found an oil sand at 1,096-1,102 feet. Since information on the test is not being given out by the operators, the report of an oil showing is not authentic.

Two of the smaller fields of Duval County received new development during the week. The Colmena field was extended to the southwest a half mile by the completion of Conservative Oil Co. No. 1 D.C.R.C. for a small initial production. The Driscoll field, developed by the Continental Oil Co. is producing from the Mirando sand for the first time in the Continental No. 16-A Sevier, section 448. The test cored the new sand at 3,605-07 feet and came in making 215 bbls. per day. The regular sand of the field was cored at 3,439-43 feet.

Thomas-Lockhart Extended

The Thomas-Lockhart field, west of San Diego, was extended a half-mile south by the completion of Lockhart Brothers No. 1 Parr. The new producer is the second completed in the new field.

Webb County activity is generally slack, with some interest showing in the Killam and Oilton section. There the new Oilton field, reported as a discovery last week, has one active test, south of the discovery well. In the Killam field, three new producers were brought in. In the western part of the field, recently extended by O. W. Killam No. 7 Garcia, Mills Bennett Production Co. No. 1 Garcia cored below the field sand to 2,574 feet. At that depth, gas sand was found. The test has been plugged back to 2,017 feet, and casing set for completion in the regular field sand.

Lower Gulf Coast

With the exception of a Saxet extension, the week's activity in the Lower Gulf Coast sector brought little new development. After showing 400 feet of oil on an eight-minute drill-stem test, L. Glasscock No. 1-C Johns set casing at 6,892 feet and was completed for an initial production of 120 bbls. per day from sand at 6,892-6,909 feet. The well extends production in the deepest Saxet sand, several hundred feet to the north.

Other completions in the Saxet field during the week, opened added production in the 4,100, 4,400 and 5,800-foot sands and a second 6,900-foot well, Hiawatha Oil Co. No. 6-B Smith, made an initial production of 351 bbls. per day.

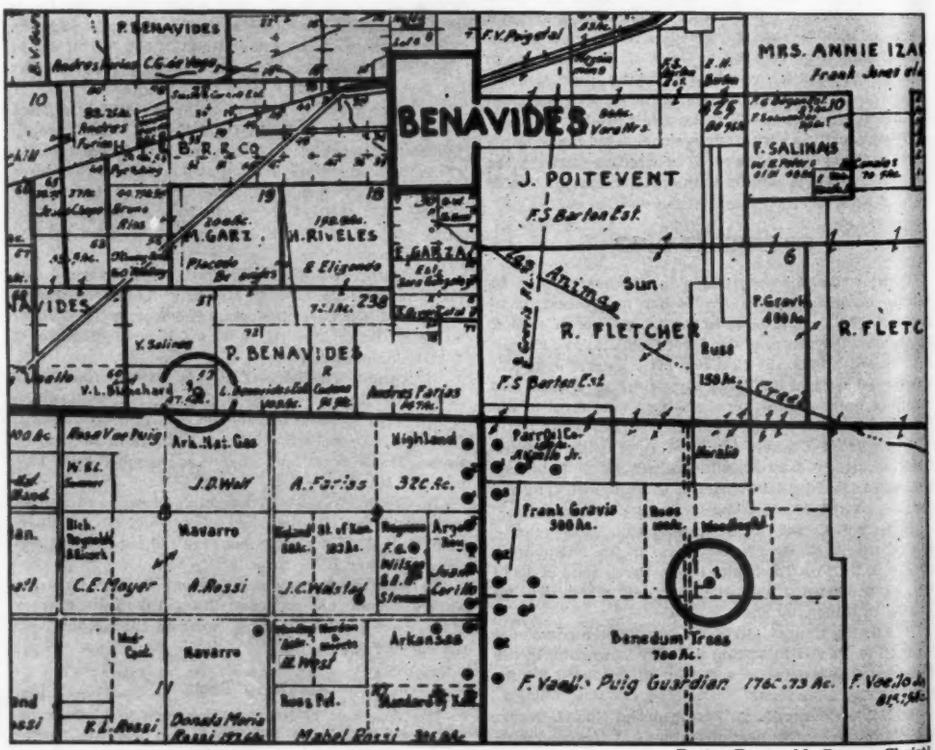
In San Patricio County, several wildcats are approaching critical depths. The headliner of three weeks ago, Danray Oil Co. No. 1 Davis, is still reported standing. It is believed to have cored sand with a show of oil at 6,530-40 feet, but official information from the operators is lacking. The wildcat is located 4 miles east of Gregory, and 3 miles southwest of the McCampbell field.

Aransas County activity, with the exception of one wildcat, centers in the McCampbell field. One of the most active drilling areas in the district at present, McCampbell, gained one new producer in the past week, with several other wells on top of the 7,100-foot sand and due for early completion. Eighteen rotaries are active in the field.

On the Lamar Peninsula, Barnsdall Oil Co. is drilling the deep wildcat No. 2 Edwards. The test is an offset to No. 1, which several months ago blew out, cratered, and made some oil and much salt water before being shut in. The No. 2 is drilling below 9,770 feet and is slated to go 10,000 feet.

The Lower Rio Grande Valley showed interesting

(Continued on Page 98)



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The North Sweden field of Duval County was extended to the east 1 mile by the completion of Woodley Petroleum Co. No. 1 Parr, indicated by the heavy circle. To the northwest of production in the newly discovered field, the V. L. Blanchard No. 1 Benavides, is drilling, and will be closely watched by field operators

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ILLINOIS FIELD WORK GAINS, COMPLETE THREE OIL WELLS

MATTOON, Ill., Aug. 16.—The feature of the past week in Illinois fields was the completion of Ohio Oil Co.'s pool opener in Richland County. Two other oil wells were completed, four wells were abandoned and four locations were temporarily abandoned. Activity increased, however, there being 25 new tests reported, 11 of which were in Marion County.

Ohio Oil Co. No. 1 Arbuthnot, NW cor. section 8-3n-9e, was completed at 2,988 feet, total depth, to open a new area in Richland County. It topped Chester formation at 2,030 feet, Cypress 2,603 feet and Roseclaire sand at 2,970 feet. It had initial production of 1,996 bbls. of 39-gravity oil in 24 hours, with 960,000 feet of gas.

In Clinton County, Barteiso Oil & Gas Co. No. 1 Schlarman, CWL SE SW section 5-1n-3w, had oil pay at 973-87 feet, total depth, pumped 74 bbls. of oil in 24 hours and was completed.

Pure Oil Co. No. 3 Weiler, NW NW SE section 33-3n-8e, in Clay County, topped St. Genevieve lime at 2,890 feet, total depth 2,980 feet, pumped 184 bbls. of oil in 24 hours and was completed.

Two failures were recorded in Marion County. Adams Oil & Gas Co. No. 1 Oscar Hill, CEL SW SE section 28-4n-1e, topped St. Genevieve lime at 1,579 feet, Roseclaire sand 1,610 feet, total depth 1,702 feet, showed streaks of sulfur water, and was dry and abandoned. Brown and others No. 1 Bachman, NW NW SE section 22-4n-1e, had a hole full of water and was abandoned at 1,707 feet, total depth.

In Randolph County, Hood & Cain No. 1 Burns, SE SE NE section 31-4s-5w, had broken sand at 985-1,004 feet, total depth, and was dry and abandoned.

W. H. Hazlett No. 1 Hearman, NE cor. section 5-7n-6e, Effingham County, was abandoned temporarily at 2,106 feet, total depth.

Four locations in Wayne County were abandoned temporarily by Pure Oil Co., at No. 1 Birkett, NE cor. section 34-1n-7e; No. 1 Byars, NW SE SE section 34-1n-7e; No. 1 Clay, SE NE NW section 27-1n-7e, and No. 1 Billington, SE cor. section 23-1n-7e.

New Operations

The following new activity in Marion County was reported: Star Well Syndicate No. 1 Nattier, NE NE SW section 28-4n-1e, spudded; Adams Oil & Gas Co. No. 10 Merryman, SE SE SW section 21-4n-1e, and No. 11 Merryman, SW SE SW section 21-4n-1e, locations; same company's No. 2 Ingles, CNL NW SE section 28-4n-1e, and No. 3 Howell, C S half NE NW section 28-4n-1e, locations; J. F. Staley Drilling Co. No. 1 Watkins, C N half SE SE SW section 28-4n-1e, rigging up rotary; Kirk D. Holland and others No. 1 Symcox, SE SE SW section 28-4n-1e, drilling at 435 feet; Huddleston No. 1 Nattier and others, SE NE SE SW section 28-4n-1e, total depth 927 feet, casing collapsed; Cypress Oil & Gas Co. No. 3 Adams, SE SE SW SW section 28-4n-1e, drilling at 700 feet; Bivens and others No. 1 Kruse and others, NW SW SE section 28-4n-1e, rigging up rotary, and A. Bruner No. 1 Kuyoth, NW cor. section 30-2n-8e, building derrick.

In Clay County, Pure Oil Co. had five new tests, as follows: No. 1 Moseley A, SE SE NW section 28-3n-8e; No. 1 Wilkin, NE NE SW section 28-3n-8e; No. 4 Poppe, SW SW NW section 27-3n-8e, and No. 6 Poppe, NW NW SE section 28-3n-8e, locations, and No. 5 Poppe, NW SW NW section 27-3n-8e, cellar and pits.

P. J. Campbell No. 1 Allen, SW SW NW section 28-3n-2w, new test in Clinton County, was ready to spud.

Four new operations in Richland County were reported. Ohio Oil Co. No. 2 Arbuthnot, NE NW NW section 8-3n-9e, had spudded, and No. 3 Arthbutnot, NW NE NW section 8-3n-9e, was a location. Pure Oil Co. No. 1 Palmer, SE SE SW section 5-3n-9e, was a location. Same company's No. 3 Walters, SW SE SW section 5-3n-9e, was building derrick.

In Wayne County, Fitzpatrick & Meyers No. 1 Shannon, SE SE NE section 26-2n-8e, was moving in material.

Johnston & Spears No. 1 Poorman, NW NE NW section 5-4s-8e, in White County, was building derrick.

Commercial Oil & Gas Co. No. 1 Baumbuger, NW NW SW section 30-6n-3w, was location for a new test in Bond County.

In Edgar County, Hassett and others No. 1 Stark, SE SE NE section 18-12-13w, had spudded and shut down.

Clay County

Duncan Oil Co. No. 1 Carroll, NE NE SE section 8-2n-8e, in Clay County, was drilling at 2,200 feet. Pure Oil Co. No. 2 Sarah Bechtel, SW SW NE section 33-3n-8e, had cemented tools and was to whipstock. Same company's No. 1 Oscar Poppe, NW NE SE section 28-3n-8e, was drilling at 2,522 feet; No. 2 Poppe was drilling at 2,930 feet, and No. 3 Poppe, NE NW SE section 28-3n-8e, was drilling at 2,649 feet.

Wiser Oil Co. No. 2 D. Smith, SE SE NE section 28-3n-8e, had a showing of oil in cores from 2,959 feet and was coring below 2,976 feet. Same company's No. 3 Smith, NE SE NE section 28-3n-8e, was drilling at 2,125 feet, and No. 4 Smith, SE SW NE section 28-3n-8e, was drilling below 125 feet.

Pure Oil Co. No. 2 Weiler, SW SE SE section 33-3n-8e, was drilling at 2,472 feet; No. 6 Weiler, NW SW SE section 35-3n-8e, was drilling below 800 feet. Pure Oil Co. No. 4 Weiler, NE NW SE section 33-3n-8e, was bottomed at 3,019 feet, was acidized, swabbed three times, flowed mud, salt water and oil into the pits and was testing.

J. D. Davis No. 1 Volbert, NW SE SW section 12-2n-6e, was drilling at 2,650 feet. Wicklund Development Co. No. 1 Sanford, SE SE NW section 29-3n-8e, drilled to 3,035 feet and was coring. Pure Oil Co. No. 1 Chaffin, NW NW SW section 27-3n-8e, was drilling at 2,842 feet. Same company's No. 2 B. Travis, NE SW NE section 33-3n-8e, was drilling at 2,431 feet. Same company's No. 3 B. Travis, SW NW NE section 33-8n-8e, had pay at 2,967-75 feet, set 7-inch casing at 2,927 feet and was waiting on cement.

Marion County

Schlossberg & Sigel No. 1 Roddy, SW SE SW section 20-2n-3e, in Marion County, was underreaming 8-inch pipe at 1,730 feet. Adams Oil & Gas Co. No. 1 Rogier, NW NW SW section 3-3n-1e, cored salty sand from 1,378 feet to 1,388 feet and was drilling ahead. Same company's No. 2 Howell, CWL NE NW section 28-4n-1e, cored hard, saturated oil sand at 1,404-11 feet, total depth, set 5½-inch casing at 1,382 feet and was waiting on cement.

Kirk D. Holland No. 1 Wassem, SW NW SE SW section 28-4n-1e, had Benoist sand at 1,459-62 feet, swabbed 14 bbls. of water and 10 bbls. of oil in 24 hours, and was to deepen. C. G. Evans No. 1 Allison, NW NE NW SW section 33-4n-1e, had a showing of oil at 1,648-50 feet, total depth, and was testing. Eddington and others No. 1 Nichols, CEL SW SE section 12-4n-4e, was drilling at 2,475 feet. Carter Oil Co. No. 1 Medzger, C W half NW SE section 4-4n-3e, was rigging up rotary.

Clinton County

Willis and others No. 1 Varel, SE SE SW section 6-1n-3w, in Clinton County, was bottomed at 750 feet and running 10-inch casing.

Bond County

Whitehead and Morey No. 1 Polland, NW SE SW section 26-6n-2w, Bond County, was shut down at 1,450 feet, waiting on water.

Richland County

R Neeley and others No. 1 Baughman, SE SE NE section 22-3n-10e, in Richland County, set 10¾-inch casing at 333 feet and was drilling plug. Pure Oil Co. No. 1 J. C. Eagleton, NE cor. section 7-3n-9e, was drilling at 2,036 feet. Same company's No. 1 Walters, SW cor. section 5-3n-9e, was drilling at 2,370 feet.

Perry County

J. H. Firester No. 1 fee, C W half SW NW section 5-6s-1w, in Perry County, was drilling at 5,092 feet.

Pope County

C. C. Whitlock and others No. 1 Anthis, NW NW NE section 12-11s-5e, in Pope County, was drilling below 200 feet.

Randolph County

J. E. Mabee and associates No. 1 Wilson, C E half SE NE section 3-4s-5w, in Randolph County, was drilling below 1,525 feet.

Washington County

Milliken and others No. 1 Lesseman, NW cor. section 36-1n-2w, in Washington County, was drilling at 925 feet.

Wayne County

Mammoth Production & Refining Co. No. 1 Garrison, NW NW NE section 11-1s-7e, in Wayne County, was rigging up standard tools. J. D. Davis No. 1 Nuger & Rose, SE NE SE SW section 21-2n-5e, was drilling at 2,930 feet. Washburn Petroleum Co. No. 1 Acola, NW NE NW section 31-2s-6e, was underreaming 8-inch casing to 1,790 feet. Pure Oil Co. No. 1 Mullinax, NE NE SE section 27-1n-7e, total depth 3,144 feet, bailed dry and was testing.

Clark County

National Consumers Oil Co. No. 1 Jackson, NW NE NW section 21-11-12w, Clark County, was drilling ahead below 2,388 feet.

Jefferson County

Dee & Carter No. 1 Hamilton, NE SW NW section 20-4s-3e, Jefferson County, topped McCloskey formation at 2,908 feet, had a showing of oil and was shut down to run 3-inch pipe with packer.

Jasper County

Diamond Half Oil Co. No. 1 Isley, C NW NW section 24-8n-8e, Jasper County, was building rig.

Vigo County, Indiana

Carter Oil Co. No. 1 Paddock, C S half SE NE section 16-10n-10w, in Vigo County, Indiana, was acidized, flowed 48-bbl. load and 7 bbls. of oil by heads, bailed water for 10 hours, plugged back to 2,168 feet and was waiting on cement.

OHIO

LIMA, Ohio, Aug. 16.—Ohio completions again gained an almost normal pace during the past week. Clinton sand completions in the northeastern part of the state, however, still seem to be in a decided slump. In Medina County, the only completion of the week was the Harry Dempsey No. 1 Nelson Lance in section 14, Chatham Township. The well had an open flow of 368,000 feet naturally from Clinton sand at 3,085-91 feet, total depth of 3,121 feet. A shot did not increase production.

In Loraine County, William Dempsey No. 1 Charles Werseh, section 13, Avon Township, was a dry hole in Clinton sand at 2,400-06 feet, total depth of 2,460 feet.

In Knox County, Ohio Fuel Gas Co. No. 1 James Hoyman, section 18, Butler Township, gauged 368,000 feet of gas, rock pressure 925 pounds. The first Clin-

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ton was dry at 3,023-53 feet, with gas in the second streak at 3,062-70 feet. Hulse & Kuntz No. 2 L. A. Stone in section 10, Jackson Township, made 100 bbls. of oil the first 24 hours after shot in Clinton sand at 3,141-92 feet.

In Tuscarawas County, Natural Gas Co. of West Virginia plugged and abandoned No. 1 George C. Evans, in section 5, Sandy Township, at 4,805 feet.

In Ashland County, Robinson and others No. 5 Howard E. Young, section 16, Lake Township, gauged 104,000 feet of gas in the Berea at 638-54 feet, with a total depth of 662 feet.

243 Bbls. First Day

In central Ohio, the outstanding producer was completed in section 13, Fallsbury Township, Licking County. It was Rutiege & Mosholder No. 2 Thomas Moran. The well made 243 bbls. of oil the first 24 hours after the shot. The Clinton sand was encountered at 2,958-3,014 feet. In the same county, Wehrle Gas Co. No. 1 Ben Jones, in Newark Township, made 60,000 feet of gas naturally from Clinton at 2,295-2,330 feet. The same company's No. 2 John Murphy in the first quarter of Licking Township, Licking County, an old Berea well, was drilled to the Cinnamon, and abandoned as dry at 1,430 feet. Pure Oil Co. No. 15 George Madden, in the same township, made 80 bbls. of oil from the Clinton sand at 2,974-78 feet. Gail Farley and others No. 1 Charles Lothes, section 7, Perry Township, Licking County, made 7 bbls. of oil the first 24 hours after a shot in the Berea at 720-34 feet. In the same township and county, Hope Construction & Refining Co. No. 3 Delphia Smith, section 17, made 15 bbls. of oil in the Berea at 628-37 feet.

The Ohio Fuel Gas Co. No. 151 Sunday Creek Coal Co., in section 19, Monroe Township, Perry County, gauged 146,000 feet of gas in the Clinton sand at 3,514-47 feet, total depth 3,575 feet. The well was shut in, with a rock pressure of 1,050 pounds.

In the eastern Ohio field, several completions are reported in Guernsey County. Among these are Moss & Yaus No. 1 David S. Gibson, section 7, Jefferson Township. It made 225,000 feet of gas naturally in the Berea sand at 1,162-1,223 feet. The rock pressure was reported at 220 pounds. Ohio Fuel Gas Co. No. 1 State of Ohio, section 16, Millwood Township, gauged 25,000 feet of gas in the Berea at 1,475-84 feet, total depth 1,500 feet. In the fourth quarter of Cambridge Township, John Bindas No. 1 P. W. Camp was plugged and abandoned in the Berea sand at 1,081-1,126 feet, total depth 1,144 feet.

In Noble County, White Oil Co. No. 1 F. C. Schneeberger, section 4 of Jefferson Township, was a dry hole in the Maxburg Stray sand at 950-57 feet.

In Washington County, Otto Heidman and others No. 4 Ernest Epler, section 19, Liberty Township, gauged 134,000 feet of gas in the second Cow Run sand at 978-1,094 feet. The total depth was 1,136 feet. The rock pressure was reported at 300 pounds. H. F. Trechell No. 16 on his farm in section 18, Barlow Township, gauged 40,000 feet of gas in the Maxton sand at 1,118-40 feet. The total depth was 1,180 feet. The well was saved for domestic use.

In southern Ohio, in Meigs County, T. W. Bengal No. 4 Albert Heilman, section 36, Salisbury Township, gauged 960,000 feet of gas in the Maxburg 300-foot sand at a depth of 360-73 feet. The reported rock pressure was 105 pounds. Roy Holmes No. 1 Elias Jividen, section 25, Lebanon Township, was shut in with an open flow of 317,000 feet of gas in the first Berea sand at 2,140-45 feet, rock pressure 560 pounds. Peoples and others No. 1 S. M. Russell, Jr., section 3, Rutland Township, was a dry hole in the Salt sand at 647-85 feet, total depth 690 feet. Ohio Fuel Gas Co. No. 3 A. B. McGhee, section 2, Rutland Township, was plugged and abandoned. The Salt, Maxburg 800-foot and Maxton sands were penetrated with a total resulting open flow of only 21,000 feet. It was not considered a commercial well.

EASTERN KENTUCKY

ASHLAND, Ky., Aug. 16.—One small oil completion is included in the reports from this section this week. Operations are reported lighter in some sections while reports from other counties are indefinite and incomplete. The oil completion was the George B. Frelleson operation on the E. W. Baker farm on South Fork in Powell County, which shows a daily flow of 3 bbls.

With a slight increase in the number of completions within the past two or three weeks, numerous rigs are being moved to new locations while in other sections roads are being built to new locations. Other operators have reached a point in drilling where steady progress is reported but completion still quite a bit in the future.

The reported operations in Eastern Kentucky for the week follow, by counties:

Elliott County

In Elliott County, Necessity Oil Co. hit a dry hole in No. 2 Claude Wheeler on Newcum Creek in the Isonville district at a depth of 800 feet.

Knott County

Kentucky West Virginia Gas Co. is down 730 feet in sand in No. 553 Isom Gibson in Knott County and is rigging up No. 5228 Nancy Johnson on Caney Fork. It has reached the 465-foot level in No. 552 Lark Slone on Jones Fork with drilling continuing in slate formation. Inland Gas Corp. is drilling at 1,845 feet in No. 1 Ritter Short on Wiley Fork of Troublesome Creek, in Maxon formation, and is rigging up No. 2 E. A. Hammonds on Right Fork of Troublesome Creek. Inland is moving rig to location of No. 3 R. C. Kilgore nearby.

Floyd County

Inland Gas Corp. is building road to location of No. 1 Ollie M. Glenn on Levisa Fork in Floyd County. Kentucky West Virginia Gas Co. is down 151 feet in slate in No. 555 Grover Jervis on Home Branch of Buffalo Creek.

Martin County

Kentucky West Virginia is moving to location of No. 5225 C. W. Preece on Coldwater Fork in Martin County. It has temporarily halted operations at No. 5226 on the same farm and is down 195 feet in No. 5227 on the same land.

Powell County

Ashland Oil & Refining Co. reports that George B. Frelleson has completed No. 2 E. W. Baker on South Fork in Powell County with a daily flow of 3 bbls. Wireman Brothers are down 200 feet in No. 1 James Bellomy on South Fork.

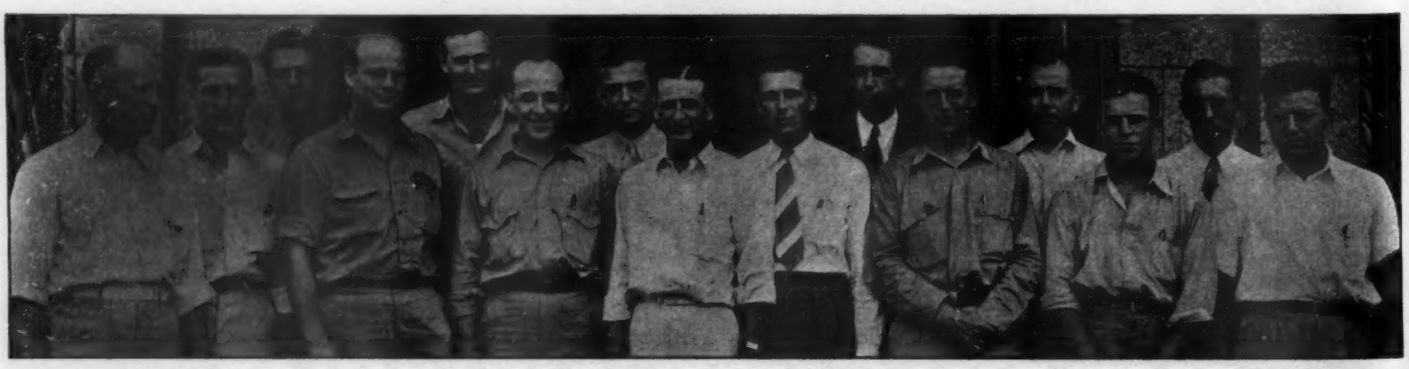
WESTERN KENTUCKY

OWENSBORO, Ky., Aug. 16.—In Hancock County, Easton district, W. E. Hupp and others No. 3 J. Easton is drilling at 150 feet. Chester Oil Co. No. 9 J. W. Baughn at 260 feet. J. H. Taulbee No. 2 Daniel Friel at 75 feet and Earley and others No. 4 Everett Bowman at 150 feet. In Indian Lake district Tom Galey and others No. 1 J. W. Holder is drilling at 660 feet after one year shut down, going to Corniferous. In Pellville district C. D. Walker No. 2 Ellen House was dry through Bethel sand, total depth 728 feet. In Tell City district Kentucky Natural Gas Co. No. 2 J. C. Adams is drilling at 725 feet and its No. 1 Mrs. Humphries is moving in. In Utility district W. E. Hupp and others No. 1 R. E. Richardson is spudding. In Floral district Kentucky Natural Gas Co. and others No. 1 Edward Fuchs is drilling at 600 feet. Frank Damron and others No. 3 H. C. Emrich at 225 feet and Grovely Oil Co. No. 3 Baker Bros. has 1,178,000 feet of gas in the Jackson sand at 545-50 feet, total depth 550 feet.

In Ohio County, Fordsville district, Elvis Dehart and others No. 4 Clark Heirs is shut down for repairs. V. M. Amsler No. 3 Charles Downs is broke down at 210 feet. A. Teller No. 1 Ritta Royal is moving in. In Narrows district Whitehouse Oil & Gas Co. No. 3 Callie S. Lloyd has 324,000 feet of gas at 207 feet in the Jackson sand at 494-509 feet, total depth 509 feet. Whitehouse Oil & Gas Co. No. 4 Callie S. Lloyd is moving in. Nollem Oil & Gas Co. No. 2 Marshall Lloyd made 15 bbls. in the Jackson and Barlow sands and No. 3 is drilling at 150 feet. In Friendship Church district Doc Serman No. 28 Nancy Farmer made 10 bbls. in the Jett sand. A. Teller and others No. 2 A. S. Edge is drilling at 550 feet. In Collier district J. C. Ellis No. 4 J. H. Evans is drilling at 150 feet. In Adaburg district B. & B. Oil Co. No. 20 Tom Westerfield is drilling at 200 feet. In Dundee district Globe Oil Co. No. 22 Rommey Graham is drilling at 350 feet and No. 23 at 150 feet. Porter Evans No. 1 Claude Shultz is drilling at 250 feet. In Taffey district J. C. Ellis No. 16 B. L. Gossett is spudding in, as is his No. 18 J. T. Hoagland. Taylor & Lipens No. 2 Bartlett Heirs is drilling at 300 feet. Bondell and others No. 1 Alonzo Crow is spudding in. In Buford district Leper Oil Co. No. 1 Ernest Bartlett is drilling at 200 feet. A. Carpenter and others No. 2 Herman Barr is shut down at 608 feet. In Heflin district W. W. Damron No. 1 D. M. Coleman was dry through Bethel sand, total depth 1,425 feet. Kentucky Natural Gas Co. No. 3 R. P. Cox had 1,660,000 feet of

(Continued on Page 106)

EYES OF THE INDUSTRY IN ILLINOIS



Members of the Illinois Basin Scout Check hold their weekly luncheon meeting Tuesdays at the Hotel U. S. Grant in Mattoon. Front row: Paul E. Romine, Gulf Refining Co.; James Goin, Kingwood Oil Co.; A. H. Emerson, Sun Oil Co.; E. E. Stallard, Carter Oil Co.; A. E. Black, Phillips Petroleum Co.; W. K. Brewster, Magnolia Petroleum Co.; C. C. White, Ohio Oil Co.; P. P. Wolcott, Adams Oil & Gas Co., and W. W. Engle, Superior Oil Co. of California. Back row: W. B. DeMars, Texas Co.; W. R. Wilson, Jr., Pure Oil Co.; W. B. Sinclair, Amerada Petroleum Corp.; J. L. Fosness, Cities Service Oil Co.; E. C. Malroney, Shell Petroleum Corp.; William H. Cordell, Tide Water Oil Co.; W. P. Johnson, Gulf Refining Co., and William Cartmell, Carter Oil Co. Officers of the organization are: Czar, Mr. Romine; assistant czar, Mr. Black; secretary-treasurer, Mr. Engle. The executive committee includes these officers and Mr. Wilson and Mr. Malroney.

Kansas Developments

OPEN NEW WOODSON POOL; SPERLING SECTOR EXTENDED

By DAL DALRYMPLE

A new pool was opened in Woodson County and several Kansas pools were extended during the past week, a busy seven days in which 64 oil and gas wells and dry holes were completed in the state. Largest of the new oil wells was an 8,252-bbl. producer in the Theede district of southern Rice County.

Diller Oil & Gas Co. and others No. 1 Draper, NE NE NW section 10-24-17e, opened a new producing area about 14 miles northeast of Yates Center in the Neosho Falls district of Woodson County. The hole was reported filled with 40-gravity oil from the first break in the Mississippi lime, but a production test had not been made. Pay was found at 1,203-06 feet, total depth. Operators were expected to complete the well at that depth and place it on production. The Diller company, headed by David H. Morgan of Eureka, is associated with Harry L. Mourer and associates of Tulsa in this wildcat. The discovery is on a block of about 3,000 acres.

The Sperling pool of Harvey County was extended one-fourth mile northward at Derby Oil Co. No. 1 Lehmann, SW SW NW section 13-22-2w, opening up Hunton lime production on the north side of the pool. Lime was topped at 3,282 feet, total depth 3,312 feet. Oil rose 2,800 feet in the hole within 30 minutes after the plug was drilled. Seven-inch casing was set at 3,285 feet. Operators were due to test and complete at present depth.

National Refining Co. No. 2 McCullough, NW SE section 1-28-6e, extended the McCullough pool of Butler County slightly to the southeast. It topped Wilcox sand pay at 3,175 feet, was bottomed at 3,181 feet, and oil rose 2,000 feet in the hole in 11 hours. Operators were due to test.

A new producing horizon was uncovered in the South Breford pool, straddling the Barton-Ellsworth County line, at Transwestern Oil Co. No. 3 Meyers, SE NE NE section 13-17-11w. Kansas City lime, the new producing zone, was topped at 3,150 feet, total depth 3,185 feet. It was acidized and produced 968 bbls. of oil in 24 hours. Other production at South Breford is from Siliceous lime.

Wildcat Completions

Western Kansas Oil & Refining Co. No. 1 Taylor, SE SE SW section 6-27-12e, wildcat in southeastern Greenwood County, topped Mississippi lime at 1,854 feet, total depth 1,897 feet, pumped 187 bbls. of oil in 18 hours, and was completed, pumping 75 bbls. of oil and 30 bbls. of water daily.

Columbian Fuel Co. No. 1 Alderman, C SW section 18-29-35w, wildcat southeast of the Hickok area in Grant County, was bottomed at 2,715 feet, shot and produced 4,000,000 feet of gas, completed.

Vickers Petroleum Co. and others No. 1 Parker, C N half NE NW section 35-11-16w, Ellis County wildcat, was dry and abandoned at 3,395 feet, total depth. Top of Siliceous lime was 3,339 feet.

Boyle & Grossman No. 1 Steinert Estate, NE SE NW section 34-15-15w, Russell County wildcat, found Conglomerate at 3,419 feet and was dry and abandoned at 3,460 feet, total depth.

W. I. Southern, Inc., No. 1 Latimer, NW NW SE section 19-15-22w, wildcat in Trego County, topped Siliceous lime at 4,631 feet, total depth 4,853 feet, and was dry and abandoned.

Carter Oil Co. and others No. 1 Bontrager, C E half NE NE section 26-24-5w, Reno County wildcat, topped Siliceous lime at 3,894 feet, total depth 3,925 feet, plugged back to 3,735 feet, had 2,500 feet of water in the hole and was dry and abandoned.

Simpson & Noble and others No. 1 Pierce, SW SE NE section 25-22-2w, Harvey County wildcat, had Siliceous lime at 3,587 feet and was dry and abandoned at 3,620 feet, total depth.

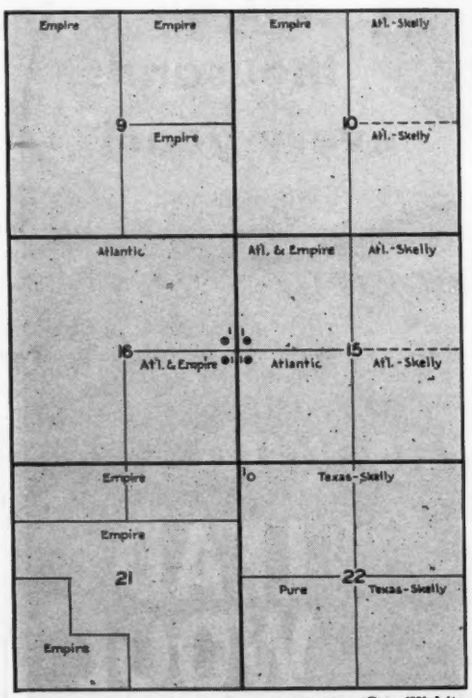
Stanolind Oil & Gas Co. No. 1 Francis, NE NE NW section 26-22-13w, wildcat in Stafford County, topped Viola lime at 3,710 feet, water intruded at 3,846 feet, total depth, and it was dry and abandoned.

Russell County

Thirteen producing oil wells were completed in Russell County the past week, two old wells were recompleted and a wildcat was abandoned.

Smoky Hill Oil Corp. No. 9 Miller, NW SW SW section 30-14-13w, topped Kansas City lime at 2,863 feet, total depth 3,160 feet, plugged back to 2,945 feet, acidized, pumped 101 bbls. of oil in four hours and made potential of 333 bbls.

Phillips Petroleum Co. No. 2 Rex, NW SW SW section 30-14-14w, had Siliceous lime at 3,209 feet,



Mid-Continent Map Co., Wichita

Newest completion in the Jordan pool, Stafford County, is Atlantic Refining Co. and Cities Service Oil Co. No. 1 Neeland B, NE NE SE section 16-25-14w

total depth 3,221 feet, pumped 133 bbls. of oil and 8 bbls. of water in 24 hours; was acidized and made potential of 533 bbls. of oil. Alva Billings No. 2 Herbel A, SE NE NW section 35-14-14w, had Granite Wash at 3,191-93 feet, total depth, pumped 304 bbls. of oil in four hours, potential 1,824 bbls.

Gulf Oil Corp. No. 8 Ehrlich, SW SE NW section 1-14-15w, Gorham area, found Kansas City lime at 3,052 feet, total depth 3,102 feet, acidized, pumped 246 bbls. of oil in four hours, potential 1,358 bbls. Texas Co. No. 4 Dumler, NE NE SE section 1-14-15w, had Topeka lime at 2,775 feet, was bottomed at 2,942 feet and made potential of 3,048 bbls. of oil, pumping and flowing. Darby Petroleum Corp. No. 4 Dumler B, SW SE NW section 11-14-15w, had Kansas City lime at 3,025 feet, total depth 3,065 feet, was acidized, pumped 293 bbls. of oil in four hours, potential 1,762 bbls. Transwestern Oil Co. No. 2 Kathryn Polcyn, NE NW NW section 14-14-15w, had Gorham sand at 3,232 feet, total depth 3,235 feet, pumped 205 bbls. of oil in four hours, potential 1,333 bbls.

W. I. Southern, Inc., No. 9 Boomhower A, NE SW NE section 30-15-13w, Trapp field, had Siliceous lime at 3,249 feet, total depth 3,253 feet, pumped 431 bbls. of oil in four hours, potential 2,589 bbls. Gulf Oil Corp. No. 8 Hoffman, SE SE SW section 31-15-13w, Siliceous lime 3,303 feet, total depth 3,312 feet, acidized, pumped 589 bbls. of oil in 12 hours, potential 1,177 bbls.; reacidized two times, potential 1,715 bbls. Phillips Petroleum Co. No. 14 Hoffman, SE SW SE section 31-15-13w, Siliceous 3,332 feet, total depth 3,336 feet, swabbed 365 bbls. of oil in seven hours, acidized, pumped 572 bbls. in four hours, potential 3,434 bbls.

Cities Service Oil Co. and others No. 2 Mai, SE SE SW section 24-15-14w, had Siliceous lime at 3,333 feet, was bottomed at 3,338 feet, acidized, pumped 260 bbls. of oil in four hours, potential 1,563 bbls. Same company's No. 5 Boomhower, NW SE NE section 25-15-14w, Siliceous lime 3,311 feet, total depth 3,317 feet, acidized two times, pumped 362 bbls. of oil in four hours, potential 2,173 bbls. Coralena Oil Co. No. 4 Deines, SE SE NE section 36-15-14w, Siliceous lime 3,274 feet, total depth 3,278 feet, pumped 440 bbls. of oil in four hours, potential 2,643 bbls.

Carter Oil Co. No. 1 Detrich, SW cor. section 8-15-13w, an old well, was deepened from 2,888 feet to 2,980 feet, acidized and made potential of 1,542 bbls. of oil, recompleted. Stanolind Oil & Gas Co. No. 1 Hlad, SW NW SW section 10-15-13w, an old well, was deepened from 3,341 feet to 3,578 feet and recompleted as a water disposal well.

New work in Russell County: Texas Co. No. 1 Deines, SW SW NE section 19-13-14w, building rig; same company's No. 1 Schnoor, NE NE SW section 31-14-13w, location; Cities Service Oil Co. No. 4 Vaughn, SW NW SW section 17-14-14w, spudded; Phillips Petroleum Co. No. 3 Carroll, NE SE SE 18-14-14w, building rig; Cities Service Oil Co. No. 2 Strecker C, SE NW SW section 36-14-14w, moving in material; same company and others No. 3 Mai, NE SE SW section 24-15-14w, building rig; same company's No. 9 Boomhower, SW NE NE section 25-15-14w, building rig; Carter Oil Co. No. 2 Detrich, C S half S half SW section 8-15-13w, an old well, rigging up to deepen; Coralena Oil Co. No. 3 Sellens Heirs B, SW NW NW section 30-15-13w, cellar; Cities Service Oil Co. No. 1 Krug D, SW SW SE section 24-15-14w, location; same company's No. 1 Rogg, SE SE NE section 27-14-13w, location; W. I. Southern, Inc., No. 10 Boomhower A, NW NW NE section 30-15-13w, tools on ground; Ohio Oil Co. No. 6 Harbauh, SW SW NW section 25-14-15w, location; Stanolind Oil & Gas Co. No. 13 Dortland, SE NE SE section 5-14-15w, moving in material; same company's No. 24 Mermis, NE SE NE section 5-14-15w, moving in material; same company's No. 23 Mermis, SE SW NE section 5-14-15w, moving in material.

Rice County

The largest well completed in Kansas the past week was Grace Oil Co. No. 8 Gossman, SW SE NE section 8-21-7w, Theede district, Rice County. It found Conglomerate at 3,355 feet, was bottomed at 3,361 feet, flowed 1,435 bbls. of oil in four hours and made potential of 8,252 bbls.

Three other wells were completed in the Hauschild-Saxman-Theede sector. Republic Natural Gas Co. No. 1 Oden, NW cor. section 5-21-7w, had Conglomerate at 3,320½ feet, total depth 3,333 feet, flowed 468 bbls. of oil in four hours, potential 2,552 bbls. Atlantic Refining Co. No. 1 Hopkins B, SW NW SW section 6-21-7w, topped Conglomerate at 3,337 feet, total depth, flowed 442 bbls. of oil in four hours, po-

tential 2,394 bbls. Garden-Haines Oil Co. No. 4 Strange, NW NW NE section 16-21-7w, Conglomerate 3,354 feet, total depth 3,373 feet, flowed 204 bbls. of oil in four hours, potential 1,029 bbls.

In the Silica field, J. H. Tatlock No. 1 Bayer A, NW NW NE section 7-20-10w, had Siliceous lime at 3,302-11 feet, total depth, was acidized, pumped 121 bbls. of oil in four hours, potential 726 bbls. J. D. Davis and others No. 2 McFarland, NW cor. section 7-20-9w, Chase pool, had Siliceous lime at 3,288-3,300 feet, total depth, and made potential of 190 bbls. of oil, with some water. E. V. Holland and others No. 1 Malone, SE NW NE section 19-20-9w, was completed as a 15-bbl. minimum well after plugging back from 3,396 feet, total depth, to 3,384 feet.

Continental Oil Co. and associates No. 3 Meyer, NE NW SW section 30-18-7w, Geneseo district, found Siliceous lime at 3,166 feet, total depth 3,172 feet, was treated with acid and made potential of 1,718 bbls. of oil. Sinclair Prairie Oil Co. No. 1 Bolton, NW NE SW section 31-18-7w, found Siliceous lime at 3,232 feet, total depth 3,237 feet, pumped 158 bbls. of oil in four hours, potential 788 bbls. Continental Oil Co. and others No. 4 Kimple, NW SE NW section 25-18-8w, was acidized and made potential of 926 bbls. of oil from Siliceous lime topped at 3,176 feet, total depth 3,201 feet.

First reports of new activity in Rice County: Republic Natural Gas Co. No. 2 Oden, SW NW NW section 5-21-7w, rigging up rotary; same company's No. 3 Oden, NE NW NW section 5-21-7w, building rig; same company's No. 4 Oden, SE NW NW section 5-21-7w, location; Continental Oil Co. and others No. 3 Lansing A, SW NE SW section 25-18-8w, location; Darby Petroleum Corp. No. 1 Oden, NE cor. section 6-21-7w, building rig; Gulf Oil Corp. No. 2 Gossman, SE SW NE section 8-21-7w, location; Republic Natural Gas Co. No. 7 Wendell, NE SE SE section 32-19-10w, rigging up rotary; Texas Co. and others No. 6 Schartz, NW SW SE section 33-19-10w, drilling at 1,700 feet; Gulf Oil Corp. No. 4 Malone, NE NW NE section 18-20-9w, set 10-inch casing at 185 feet; same company's No. 4 Poncin, NW SE NE section 5-20-10w, rig; Cities Service Oil Co. No. 3 Coldwater B, NW cor. section 17-20-9w, material on ground; same company's No. 4 Meyers, NW SE SW section 21-19-9w, an old well, to be deepened; Saco Oil Co. No. 2 Wickerham, SW SE SE section 9-20-9w, cellar; Ohio Oil Co. No. 11 Proffitt, NW NE NW section 5-20-9w, location; Sinclair Prairie Oil Co. No. 3 Knop, NW NE NW section 4-20-10w, building rig; same company's No. 2 Bolton, SE SW SW section 31-18-7w, drilling at 670 feet; Continental Oil Co. No. 1 Gum, NW SW SE section 34-19-10w, location; same company's No. 1 Warner, NW NE NW section 6-19-7w, location; Stanolind Oil & Gas Co. No. 6 Panning, SE SW NW section 33-19-10w, rig; same company's No. 2 Hathaway, SW NW SW section 33-19-10w, rig; Carter Oil Co. No. 4 Risse, C S half S half SW section 33-19-10w, rig; Ohio Oil Co. No. 2 Wilcox, C W half W half SE section 18-19-9w, rig.

Estimated Daily Production

Estimated daily production of Kansas for the week ending Aug. 14, and for the preceding week, was as follows:

	Barrels	
	Aug. 14	Aug. 7
Oxford City	1,550	1,750
Burrton	14,550	14,200
Ritz-Canton	5,975	5,700
Graber	3,425	1,800
Hollow-Nikkel	2,850	3,000
Lerado	1,975	2,625
Voshell	2,350	2,425
Wellington	3,225	3,250
Ellsworth County:		
Lorraine	5,320	3,425
Other pools	1,330	1,100
Rice-Barton counties:		
Bloomer	6,175	6,100
Chase	9,050	7,650
Geneseo	2,550	1,350
Raymond	1,925	1,750
Silica	19,650	18,550
Keesling	1,750	1,225
Hauschild	1,025	275
Miscellaneous Rice	11,460	10,860
Miscellaneous Barton	6,120	4,420
Russell County:		
Fairport	1,910	2,075
Gorham	2,010	2,290
Russell	1,965	1,760
Sullivan	9,480	8,515
Trapp	12,130	11,710
Miscellaneous Russell	6,995	7,430
Sedgwick County:		
Valley Center	1,045	1,085
Miscellaneous	2,995	2,770
Ellis County:		
Bemis	6,050	4,775
Miscellaneous	2,690	3,940
Kingman County	575	575
Stafford County	3,955	3,555
Greenwood County	10,100	10,150
Butler County	15,780	15,500
Other fields	26,115	27,465
Total Kansas	206,050	195,050

Barton County

Texas Co. No. 2 Hoffman, NE NW NW section 6-16-13w, Barton County side of the Trapp field, topped Siliceous lime at 3,302 feet, was bottomed at 3,322 feet and made potential of 1,968 bbls. of oil.

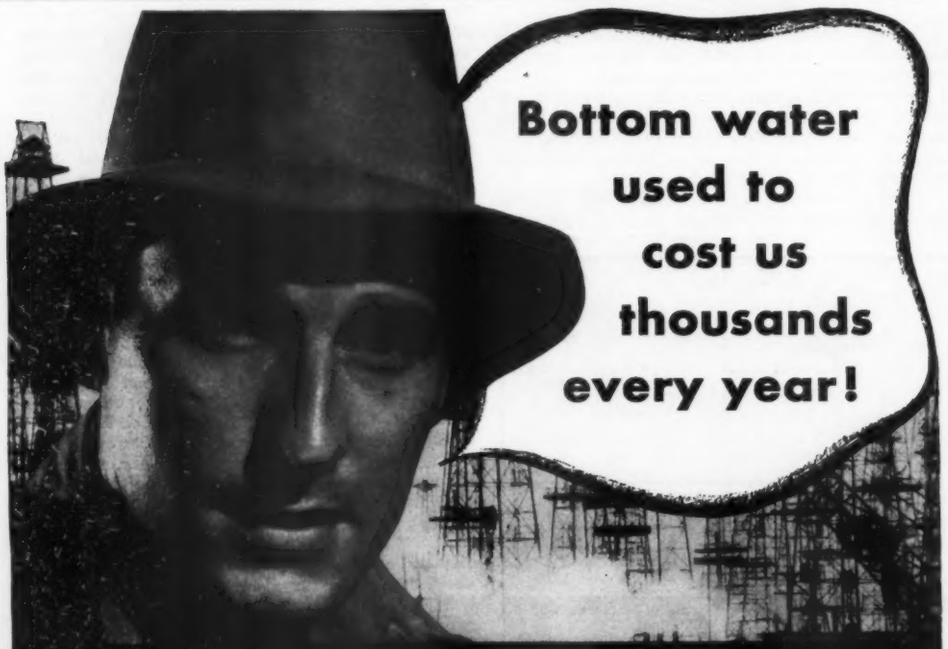
In the Ainsworth area, Armer & Vernon Oil & Gas Co. No. 3 Ainsworth, NW NE SE section 33-16-13w, found Siliceous lime at 3,376 feet, total depth 3,386 feet, was acidized, pumped 289 bbls. of oil in four hours, potential 1,737 bbls. Eason Oil Co. No. 1 Ainsworth, NE SE SE section 33-16-13w, was acidized and pumped 178 bbls. of oil in four hours, making potential of 745 bbls. from Siliceous lime topped at 3,390 feet, total depth 3,399 feet. Indian Territory Illuminating Oil Co. No. 2 Hogan, SW NW SW section 34-16-13w, found Siliceous lime at 3,367 feet, total depth 3,376 feet, pumped 162 bbls. of oil in four hours, potential 810 bbls. Stanolind Oil & Gas Co. No. 2 Riemann, NW SW NW section 34-16-13w, topped Siliceous lime at 3,368 feet, total depth 3,374 feet, was acidized, pumped 397 bbls. of oil in four hours, potential 1,889 bbls.

Stanolind Oil & Gas Co. No. 1 Arensdorf, NE NE SW section 2-20-11w, Barton County sector of the Silica field, penetrated Siliceous lime at 3,292 feet, total depth 3,304 feet, was acidized, pumped and flowed 307 bbls. of oil in six hours and made potential of 1,229 bbls.

Hilligoss and others No. 5 Isern B, NE NW NE section 12-20-11w, Silica, had Siliceous lime at 3,275-86 feet, total depth, was acidized, pumped 35 bbls. of oil in four hours, potential 209 bbls.

Spencer & Yarnell No. 5 Patzner A, SW SW SE section 36-17-11w, was reported as an abandoned location.

In the Peter pool, Indian Territory Illuminating Oil Co. No. 1 Sessler, NE NE SW section 24-20-11w, topped Siliceous lime at 3,242 feet, total depth 3,255 feet, flowed 960 bbls. of oil in eight hours, potential 2,819 bbls. Magnolia Petroleum Co. No. 10 Roetzel, NE NW SE section 24-20-11w, pumped and flowed 1,449 bbls. of oil in 24 hours after acidizing Siliceous lime, topped at 3,240 feet, total depth 3,245 feet.



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New work in Barton County: Indian Territory Illuminating Oil Co. No. 6 Peter, SW SW NW section 24-20-11w, rig; Magnolia Petroleum Co. No. 12 Roetzel, SE NW SE section 24-20-11w, rigging up rotary; Transwestern Oil Co. No. 4 Meyers, NE cor. section 13-17-11w, moving in material; Stanolind Oil & Gas Co. No. 1 Thorne, SW SW SE section 27-16-13w, building rig; Continental Oil Co. No. 7 Ainsworth A, SW NE NE section 33-16-13w, location; Stanolind Oil & Gas Co. No. 1 Deal, NW NW NE section 35-16-13w, rig; Indian Territory Illuminating Oil Co. No. 3 Bryant, SW NW NW section 25-20-11w, location; same company's No. 5 Peter, C S half S half NW section 24-20-11w, set 10-inch casing at 200 feet; same company's No. 3 Hogan, NW SW SW section 34-16-13w, rig; Stanolind Oil & Gas Co. No. 2 Kowalsky, NW SW NE section 11-20-11w, moving in tools; same company's No. 2 Panning, NW NW SE section 2-20-11w, rig; Sinclair Prairie Oil Co. No. 1 Roth, SW cor. section 28-19-11w, cellar and pits; Cities Service Oil Co. No. 1 Hogan, NW SE NW section 11-17-11w, location; Stanolind Oil & Gas Co. No. 4 Riemann, NW cor. section 34-16-13w, rig.

Ellis County

Texas Co. No. 8 Bemis A, SW NW NE section 28-11-17w, Bemis field, Ellis County, topped Siliceous lime at 3,402 feet, was bottomed at 3,411 feet, and made potential of 2,754 bbls. of oil. Same company's No. 5 Bemis A, SE SE NE section 28-11-17w, found Siliceous lime at 3,573 feet, total depth 3,588 feet, was acidized and made potential of 967 bbls. of oil.

Ryan Consolidated Co. No. 1 Bemis C, SE SE SW section 21-11-17w, found Siliceous lime at 3,402 feet, total depth 3,410 feet, and made potential of 2,734 bbls. of oil.

Margay Oil Co. No. 7 Bemis B, SE SE SW section 15-11-17w, made potential of 2,012 bbls. of oil from Siliceous lime at 3,417-22 feet, total depth.

Cities Service Oil Co. No. 9 Bemis, SE SW SE section 21-11-17w, found Siliceous lime at 3,354 feet, was bottomed at 3,381 feet and made potential of 1,496 bbls.

Gulf Oil Corp. No. 1 Koerner, NE NE SW section 11-12-18w, topped Siliceous lime at 3,663 feet, total depth 3,672 feet, was acidized, pumped 261 bbls. of oil in four hours, potential 1871 bbls.

The following new work in Ellis County was reported: Deep Rock Oil Corp. No. 17 Baumer, SW NW NE section 27-11-17w, moving in material; same company's No. 19 Baumer, NE SW NW section 27-11-17w, building rig; Texas Co. No. 12 Bemis A, NW SE NE section 28-11-17w, location; Wolf Creek Oil Co. No. 1 Bemis B, NW NW SE section 4-12-17w, moving in material; Amerada Petroleum Corp. No. 2 Shutts, NW NW NE section 6-12-17w, rig; Gulf Oil Corp. No. 2 Koerner, NW NE SW section 11-12-18w, rigging up rotary; Phillips Petroleum Co. No. 4 Staab, SE SW NE section 11-12-18w, location; Lario Oil & Gas Co. No. 2 Romine, SW SW NW section 18-11-16w, location; Carter Oil Co. No. 2 Koerner, NE NW SE section 11-12-18w, location; Bridgeport Machine Co. No. 1 Klotz, SE SW SE section 33-12-16w, moving in tools; Transwestern Oil Co. No. 1 Solomon, NE NE NW section 33-11-19w, rig; L. H. Wentz No. 5 Bemis, SW SE NW section 28-11-17w, rigging up; Deep Rock Oil Corp. No. 16 Baumer, NW SE NW section 27-11-17w, set 15-inch casing at 38 feet; Ryan Consolidated Co. No. 4 Bemis A, NW NE NW section 22-11-17w, location; same company's No. 6 Bemis B, NE SE NW section 22-11-17w, cellar; same company's No. 6 Bemis A, SE NE NW section 22-11-17w, rig; Sinclair Prairie Oil Co. No. 2 Cress, SE SE NE section 12-11-17w, rig.

Ellsworth County

Phillips Petroleum Co. No. 2 Patzner, SW cor. section 30-17-10w, Ellsworth County extension of the Bloomer pool, found Siliceous lime at 3,305 feet, was bottomed at 3,311 feet, acidized, pumped 182 bbls. of oil in four hours and made potential of 1,092 bbls.

Colonial Oil Co. No. 1 well, NW NW SW section 16-16-10w, was a location.

Harvey County

Joan-Bar Oil Co. No. 1 Zook, SW cor. section 36-22-2w, Halstead pool, Harvey County, topped Chat at 2,958 feet, total depth 2,989 feet, and flowed 90 bbls. of oil and 100 bbls. of water in 24 hours.

First reports of new activity in Harvey County: E. J. Shaffer and others No. 1 Haury, NE cor. section 14-23-2w, rigging up rotary; Olson Oil Co. and Lario Oil & Gas Co. No. 2 Murphy, NW SW SE section 30-23-3w, rigging up rotary; Shaffer and others No. 1 Saunders, NW NW SW section 20-23-3w, rig; Olson Oil Co. No. 3 Schrag, SE SE SW section 30-23-3w, location.

Trego County

Watchorn Oil & Gas Co. No. 1 Lemke A, C SE SW section 15-11-23w, an old well in the Wakeeney area, Trego County, was deepened from 3,503 feet to 3,510 feet, failed to increase production and was recompleted for old potential of 656 bbls. of oil.

Central Commercial Oil Co. No. 1 Locker, C SW section 12-14-22w, new Trego County wildcat, was moving in material.

Cowley County

E. B. Shawver No. 2 Mulkey, NW NE SE section 5-34-3e, Cowley County, topped Chat at 3,316 feet, total depth 3,320 feet and pumped 15 bbls. of oil daily, completed.

The following new operations were reported in Cowley County: J. A. Green No. 1 Mahannah, NW NW SW section 6-30-8e, rigging up machine; Lloyd, Frost & Study and others No. 2 Monforte, SW SW SE section 33-31-3e, rig; E. B. Shawver No. 2 Baruth, NW NW NE section 8-34-3e, building rig; Roth and others No. 1 Wall, SE SE NE section 30-30-5e, set 15-inch casing at 410 feet.

Coffey County

Henderson Oil Co. No. 3 McCartney, NE SE SE section 14-23-14e, Coffey County, had Mississippi lime at 1,599-1,653 feet, total depth, and was dry and abandoned.

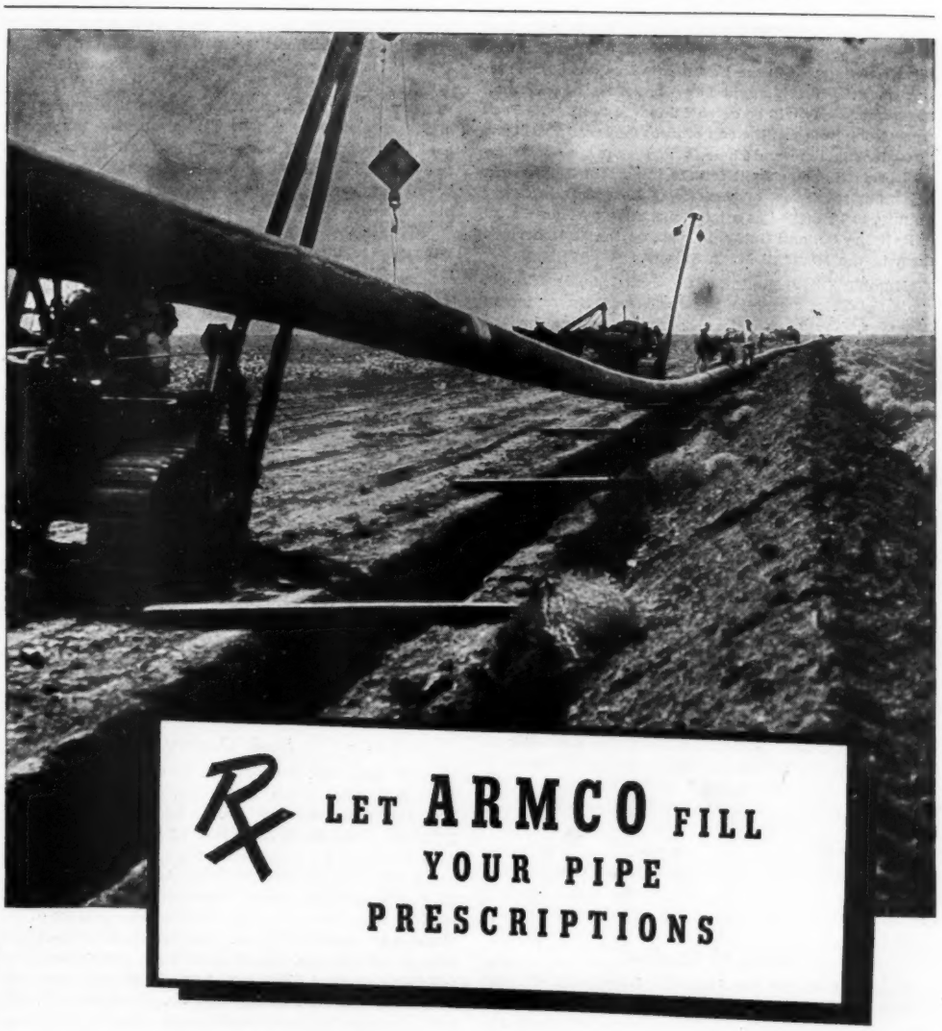
Reno County

National Petroleum Corp. No. 8 Tucker, SW SE NW section 19-24-4w, Burrton district, Reno County, topped Chat at 3,319 feet, total depth 3,380 feet, was acidized and made potential of 613 bbls. of oil.

Tabor & Coleman and others No. 1 Mueller, NE NE SE section 25-24-5w, had Siliceous lime at 3,909-14 feet, total depth, plugged back to 3,608 feet and was shot, but was dry and abandoned.

New operations getting under way in Reno County included the following: Stanolind Oil & Gas Co. and

(Continued on Page 98)



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ARMCO SPIRAL WELDED PIPE

East and East Central Texas

By
L. E. BREDBERG

OPELIKA TEST FLOWING SALT WATER FROM THE GLEN ROSE

DALLAS, Tex., Aug. 16.—Prospects for production from the Trinity formation under the Opelika structure in Henderson County seemed virtually eliminated last week as Tide Water Associated Oil Co., Seaboard Oil Corp. and Humble Oil & Refining Co. No. 2 McElreath and Suggett developed an artesian flow of salt water from Lower Glen Rose lime between 7,812-30 feet. Just before the salt water showed up the well was the center of intense interest in the East Texas area due to the fact that it acted like it might blow out. It is now drilling ahead and likely will be carried down to the Travis Peak formation. Depth at the end of last week was just below 8,100 feet in lime and shale.

Derrick is being built for the important Trinity test 2½ miles southwest of the city of Longview in Gregg County, to be drilled as a joint operation by Humble Oil & Refining Co. and Gulf Oil Corp., on the E. Robertson farm in the Marshall Mann Survey.

Humble Oil & Refining Co. No. 1 Susie Hassell, projected Trinity test in the Jarvis area in Anderson County, is having considerable trouble getting surface pipe cemented at total depth 1,376 feet. Solution cement from the well is reported showing up in seep hole springs in the Neches River bottoms, a distance of about 2 miles from the well.

Nivia Oil Co. No. 1 Citizens National Bank, in the M. D. Carmel Survey, 2½ miles southeast of Henderson, is drilling below 6,015 feet in lime, looking for Lower Glen Rose pay within the next few hundred feet.

With interest in Trinity pay possibilities in the East Texas area at a low ebb as result of a series of deep and expensive dry holes throughout the district, considerable attention is being given to Woodbine sand exploratory work. Currently, C. & G. Oil Co. No. 1 Newsome, in the T. C. Lively Survey, Percilla area in southern Anderson County, is being watched closely as the possible discovery well for a new Woodbine oil producing area. It is drilling below 5,475 feet in shale after logging the Pecan Gap chalk section, according to some correlations, as much as 125 feet higher than Placid Oil Co. and others No. 1 Elliott 4 miles to the southeast in Houston County, which is flowing around 50 bbls. of oil along with salt water and 1,000,000 feet of gas daily through perforations in casing opposite Upper Woodbine sand.

Material is being moved in for a new wildcat in Morris County, to be drilled by J. O. Whittington and associates in the T.C.R.R. Survey, on the Joiner Leasing Co. lands, about 8 miles northwest of Naples.

South of Opelika

E. B. LaRue and the American Liberty Oil Co. are rigging up to drill in the Phillip Jackson Survey, 10 miles south of Opelika. Drilling site is on Block 11, near LaRue.

This area received a hot play in 1929 when operators, led by the Superior Oil Co., drilled a well on the salt dome structure at LaRue. The new test is to be on the flank and scheduled to go 7,500 feet.

Protection acreage is held by Humble, Sun, Magnolia, Texas and Tide Water, their holdings in acreage being in the order named.

South of the block, E. B. LaRue and others, including W. C. Windsor, Tyler, have leased more acreage. Others interested in the area are Dilworth S. Hager, Dallas, and the Phillips Petroleum Co. Windsor is one of the largest individual holders of royalty and lease interests in the Opelika area, although McElreath & Suggett, Fort Worth, perhaps, were the biggest losers in the apparent failure.

In the opposite part of Henderson, location was cleared for the test to be drilled by Adams Brothers Drilling Co. on the Margaret Watkins 39-acre lease. Location has been staked east of the Sun company No. 2 Royall R. Watkins and one location north of the No. 2 Queen Sutton, drilled by Fred Allison. These tests are in the north end of the Cayuga field in the southwestern part of the county.

After pronouncing no more wells will be drilled on the nearby Royall R. Watkins tract until the outcome of the Margaret Watkins test is known, Sun company moved its drilling crew back to Kilgore for emergency drilling there. Three wells were completed on the Watkins lease since May 15. The lease contains 943 acres.

Another extension test for the North Cayuga area is in prospect with A. W. Tanner, Dallas, taking the lead in trying to block acreage near the old C. D. Neff test drilled in 1935 in the southwest portion of the Isaac Greeson Survey, 2 miles north and west of Cayuga production.

North of Athens across the line in Van Zandt County, a location reputedly has been made by B. P. Hervey on the Chitty farm in the Margaret Neal Survey, 5 miles south of Canton. Trading has been active in and around this location and the acreage is well divided among operators. Mr. Hervey has been interested in exploration work in Van Zandt for several years and hopes to start a well by September 1.

Hugo Allen has taken over No. 1 W. T. Hill, Sanches Survey, Gregg County, from H. H. & C. Oil Co.

Texas Canadian Oil Co. has acquired 10 wells from K. O. T. Oil Co. on the Cook lease, Vargas Survey, and C. H. Brown has acquired two wells from Bell & Bennet, Arterbury lease, Daniels Survey, both in Smith County.

Sklar Oil Co. has taken over two wells from W. T. Mack, Arnold lease, Christian Survey; W. T. Mack has also transferred two wells on the Frederick A lease and two wells on the Frederick B lease, Ximenes Survey, to the Pennant Oil Co., and Yates Hunt and others have taken over four wells on the Motley lease, Cordova Survey, from W. F. Weeks and others, all in Rusk County.

EAST TEXAS FIELD COMPLETIONS

Rusk County

Gulf Oil Corp. No. 36-C C. E. Christian, top sand 3,664 feet, total depth 3,674 feet, 60 bbls. per hour. Magnolia Petroleum Co. No. 16 Dick Wells, top sand 3,652 feet, total depth 3,710 feet, 20 bbls. in 40 minutes. Arkansas Fuel No. 16 Wheelis, top sand 3,664 feet, total depth 3,689 feet, 40 bbls. per hour. Atlantic Refining No. 22 R. W. Fair, top sand 3,606 feet, total depth 3,710 feet, 88 bbls. per hour. British American No. 12 J. D. Stone, top sand 3,628 feet, total depth 3,655 feet, 40 bbls. in 30 minutes. Butler & Calhoun and others No. 4-B Cox, top sand 3,600 feet, total depth 3,605 feet, 20 bbls. in 30 minutes. Chicago Oil Co. No. 4-A-a J. R. Alford, top sand 3,598 feet, total depth 3,614 feet, 50 bbls. per hour. G. B. R. Oil Corp. No. 9 E. S. Thrash, top sand 3,742 feet, total depth 3,758 feet, 48 bbls. per hour. Gulf Oil Corp. No. 14 T. B. Cashen, top sand 3,799 feet, total depth 3,801 feet, 5 bbls. per hour. Humble Oil & Refining Co. No. 11 W. Shaw, top sand 3,710 feet, total depth 3,713 feet, 70 bbls. per hour; No. 25 C. J. Thompson, top sand 3,651 feet, total depth 3,680 feet, 50 bbls. per hour.

Hunt Oil Co. No. 31-C R. W. Fair, top sand 3,635 feet, total depth 3,643 feet, 23 bbls. in 10 minutes; No. 19 C. Young, top sand 3,675 feet, total depth 3,725 feet, 22 bbls. in 10 minutes. Manahan Oil Co. No. 14 W. F. Neal, top sand 3,743 feet, total depth 3,744 feet, 20 bbls. in 30 minutes. Ohio Oil Co. No. 22 Clay heirs, top sand 3,578 feet, total depth 3,644 feet, swabbing 20 bbls. per hour. Olson Brothers No. 5 Brown, top sand 3,672 feet, total depth 3,745 feet, 18 bbls. per hour. Royal Petroleum Co. No. 1 Sol Dennis, no sand, total depth 3,685 feet, shale, dry and abandoned; No. 3-B Wooley, top sand 3,575 feet, total depth 3,612 feet, dry and abandoned. Sun Oil Co. No. 31 O. W. Knight, top sand 3,625 feet, total depth 3,625 feet, 20 bbls. in 65 minutes. J. C. Wynne No. 1 C. Lee heirs, top sand 3,650 feet, total depth 3,658 feet, 65 bbls. in 40 minutes.

Gregg County

Jay Simmons No. 1 Rogers-Dunlap, top sand 3,575 feet, total depth 3,612 feet, 50 bbls. per hour. Magnolia Petroleum Co. No. 16 Bradley, top sand 3,490 feet, total depth 3,502 feet, 110 bbls. per hour. B. F. Phillips No. 1 Mitchell, top sand 3,590 feet, total depth 3,594 feet, dry and abandoned. Shell Petroleum Corp. No. 17 S. C. Fishburn, top sand 3,485 feet, total depth 3,529 feet, 30 bbls. in 30 minutes. Stanolind Oil & Gas Co. No. 7 R. Christian, top sand 3,604 feet, total depth 3,664 feet, 55 bbls. per hour; No. 11 L. C. Ingram, top sand 3,487 feet, total depth 3,573 feet, 68 bbls. per hour. Washington Oil Corp. No. 1 Cobb heirs, top sand 3,558 feet, total depth 3,618 feet, 65 bbls. per hour. Atlantic and Byrd-Frost No. 16-A M. B. Hughey, top sand 3,554 feet, total depth 3,600 feet, 104 bbls. per hour. T. J. Carter No. 3 Foltz, top sand 3,532 feet, total depth 3,566 feet, 40 bbls. in 30 minutes. Empire Oil & Refining Co. No. 17 E. L. Walker, top sand 3,602 feet, total depth 3,627 feet, 11 bbls. in 15 minutes. Gulf Oil Corp. No. 96 S. Hilburn, top sand 3,504 feet, total depth 3,530 feet, 20 bbls. in two hours. B. F. Phillips No. 1 A. W. Miller, top sand 3,597 feet, total depth 3,599 feet, pumped 20 bbls. in four hours. Sells Petroleum Co. No. 6 E. Sibley, top sand 3,585 feet, total depth 3,605 feet, 25 bbls. in 20 minutes. V. J. Sladek No. 1 B. Greer, top sand 3,611 feet, total depth 3,612 feet, dry and abandoned, salt water. H. R. Smith No. 10 M. B. Hughey, top sand 3,509 feet, total depth 3,539 feet, 22 bbls. in 30 minutes. Southport Petroleum Co. No. 6, I.&G.N. Survey, Tract No. 5, top sand 3,491 feet, total depth 3,505 feet, pumped 4 bbls. per hour. Tide Water No. 20 C. G. Strong, top sand 3,607 feet, total depth 3,615 feet, 8 bbls. in 10 minutes.

Smith County

Texokana Oil Co. No. 2-A S. S. Cook (was No. 3), top sand 3,737 feet, total depth 3,738 feet, 100 bbls. per hour.

Upshur County

O. V. Mullins No. 4 E. C. Johnston, top sand 3,667 feet, total depth 3,670 feet, sandy shale, 27 bbls. in 30 minutes. Sun Oil Co. No. 4 F. Medlin, top sand 3,717 feet, total depth 3,718 feet, 20 bbls. in two hours.

EAST CENTRAL TEXAS COMPLETIONS

Anderson County

Hunt Oil Co. No. 1 R. M. Johnson, top Woodbine 5,235 feet, total depth 5,285 feet, estimated 100,000,000 feet of gas, casing pressure 2,050 pounds, tubing pressure 2,040 pounds; No. 1 F. D. Poole, top Woodbine 5,218 feet, total depth 5,373 feet, 123 bbls. in 24 hours, one-eighth inch choke. Tide Water-Seaboard No. 4 L. A. Ramby, top sand 4,036 feet, total depth 4,082 feet, 73 bbls. in 24 hours, one-eighth inch choke.

Collin County

F. Jones (formerly Port Bolivar) No. 1 A. Shirley, total depth 3,003 feet, dry and abandoned.

Freestone County

Bayou River Oil Co. No. 2 Trinity River, water sand 5,267-70 feet, total depth 5,291 feet, 14,000,000 feet of gas. S. J. Taylor No. 1 G. Weaver, location abandoned.

Franklin County

Byrd-Frost No. 2 Evans, top sand 4,124 feet, total depth 4,270 feet, flowed 360 bbls. in 24 hours; No. 11 E. Phillips, top sand 4,120 feet, total depth 4,275 feet, pumping 340 bbls. in 24 hours. Grey & Wolfe No. 2 O. E. Bolin, top sand 4,230 feet, total depth 4,330 feet,

(Continued on Page 106)

Oklahoma Operations

By
DAL DALRYMPLE

WILDCAT NEAR LAMONT MAY OPEN NEW WILCOX OIL POOL

Long cherished hopes of Oklahoma oil operators that a new Wilcox sand pool of some importance would be uncovered in the northwestern part of the state were revived the past week when a considerable showing of oil was found in a Grant County wildcat.

Carter Oil Co. and associates No. 1 Crissman, C W half SW NW section 16-25-3w, wildcat in Grant County, about 3 miles southeast of Lamont and near Salt Fork, topped Wilcox sand at about 5,400 feet, total depth 5,408 feet. On drill stem test it yielded 420 feet of fluid in 20 minutes, of which 330 feet was 49-gravity oil with 90 feet of mud and drilling water. Gas was estimated around 1,000,000 feet. Operators were preparing to run 7-inch pipe, cement and test. Optimistic Oklahoma oil men were hopeful that this showing would lead to the opening of a Wilcox pool on a trend from the Deer Creek pool, along the Nemeha buried mountain range. This general area has looked promising for several years, but heretofore all efforts to find oil resulted in failure.

The wildcat is on a communitized block of approximately 1,600 acres. The area has been core drilled, explored by seismograph and otherwise checked by geologists. Carter Oil Co. owns 48½ per cent of the block, Mid-Continent Petroleum Corp. 20½ per cent, Sinclair Prairie Oil Co. 18½ per cent and Texas Co. 12½ per cent. A failure was recorded the past week at another Grant County wildcat north of No. 1 Crissman, at Carter Oil Co. and others No. 1 Kolarik, NW SW section 4-26-5w.

Estimated Daily Production

Estimated daily production of Oklahoma for the week ending August 14, and for the preceding week, was as follows:

	Barrels	
	Aug. 14	Aug. 7
Allen	5,200	5,400
Billings	7,250	7,825
Burbank	8,250	8,350
South Burbank	16,125	16,250
Balance Osage	22,200	22,250
Blackwell district	5,475	5,450
Bristow-Slick	7,600	7,675
Chandler	2,975	2,975
Crescent	9,225	8,775
Cromwell	3,425	3,400
Cushing-Shamrock	10,800	10,950
Duncan district	4,225	4,250
Edmond	17,750	18,250
Fish	6,825	7,300
Fitts	98,725	86,550
Jesse	3,800	4,400
Graham	4,525	4,550
Gray	1,250	1,200
Healdton	10,000	9,850
Hewitt	4,425	4,500
Holdenville	900	900
Keokuk	8,425	8,525
Konawa	3,075	1,500
Lucien	15,500	14,750
Moore	11,750	12,500
Oklahoma City	157,200	173,275
Olympic	12,550	12,375
Polo	1,100	1,075
Sasakwa and townsite	2,500	2,725
Sholem-Alechem	3,100	3,100
Seminole:		
Bowlegs	11,750	11,925
Carr City	5,425	5,475
Earlsboro	6,575	6,800
South Earlsboro	725	750
East Earlsboro	7,775	7,375
Little River	11,975	12,000
East Little River	1,100	1,100
Maud	800	725
Mission	2,075	2,075
Seminole	9,275	9,275
East Seminole	2,900	3,100
Searight	4,275	4,500
Total Seminole	64,650	65,100
St. Louis-Pearson	20,750	20,700
Tatums	5,700	5,800
Tonkawa-Garber-Thomas	5,050	5,025
Wewoka	3,225	3,200
Yale-Jennings	4,300	4,325
Other pools	79,100	79,100
Total Oklahoma	648,925	654,125

Mid-Continent Petroleum Corp. and others No. 1 Ne-Thah-Pea-Se, SE SE NE section 24-11-4e, wildcat northeast of Shawnee in Pottawatomie County, produced 285 bbls. of oil in 24 hours after a shot and was due for completion as a new pool opener. It had pay at 4,818-86 feet.

The deep wildcat test being drilled in southeastern Stephens County by Carter Oil Co. and associates at No. 1 Harley, C NE NE section 24-2s-4w, was bottomed at 8,157 feet, and was due to drill plugs at 7,475 feet and continue drilling to Arbuckle lime expected around 8,300 to 8,500 feet. It has had several showings of oil in Oolitic lime and if the Arbuckle should not be productive casing probably will be perforated and the upper horizons tested.

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 1 Westheimer & Daube, SW SE SW section 27-6s-2e, wildcat east of Marietta in Love County, which has been shut down for several months, was tested three times the past week and flowed a total of 337 bbls. of oil, then went dead and was shut in. Production was from 4,860-70 feet.

Considerable leasing is reported in Kiowa and Washita counties, with prospects that several tests may be started in the area before the end of the year. Anderson-Prichard Oil Corp. is reported to be assembling a 5,000-acre block in Townships 7n-19w and 7n-20w, northwestern Kiowa County. Some major companies and independents also were buying in this district. Principle Oil Co. has completed one small well in the area and was starting a second test. Pure Oil Co. has a big block in Washita County, to the north of this play and several majors have taken checkerboard spreads along the northwest trend between the Wichita Mountains and Elk City, in Beckham County. Amon Carter, Fort Worth, Tex., publisher and oil operator, entered the southern Oklahoma play with the purchase from Shasta Oil Co. of an interest in a spread of leases in Townships 1s-7w and 1s-6w, Stephens County.

A lease sale will be held at the Five Civilized Tribes Indian agency in Muskogee August 27. A total of 112 tracts of Indian lands in Washington, Nowata, Tulsa, Creek, Wagoner, Muskogee, McIntosh, Okmulgee, Okfuskee, Hughes, Seminole, Coal, Pontotoc, Garvin, McClain, Grady, Stephens and Jefferson counties are listed for sale.

Wildcat Completions

Sinclair Prairie Oil Co. No. 1 Stockton, SE SW section 26-6s-2w, wildcat in northwestern Love County, near Oswalt, was listed as a completion after many months of effort to increase production. It flows from 50 to 57 bbls. of oil at four to five-day intervals. It was bottomed at 8,583 feet. Operators set 5½-inch casing at 6,624 feet.

Another wildcat that once was temporarily abandoned was completed the past week as a small producer. It was Carter Oil Co. and others No. 1 Thompson, C S half NE NW section 24-2n-9e, on the Centrahoma structure in Coal County. It was plugged back from 7,126 feet to 6,330 feet, casing was perforated at 6,140-80 and 6,200-35 feet, acid was applied and it was completed for 35 bbls. of oil daily.

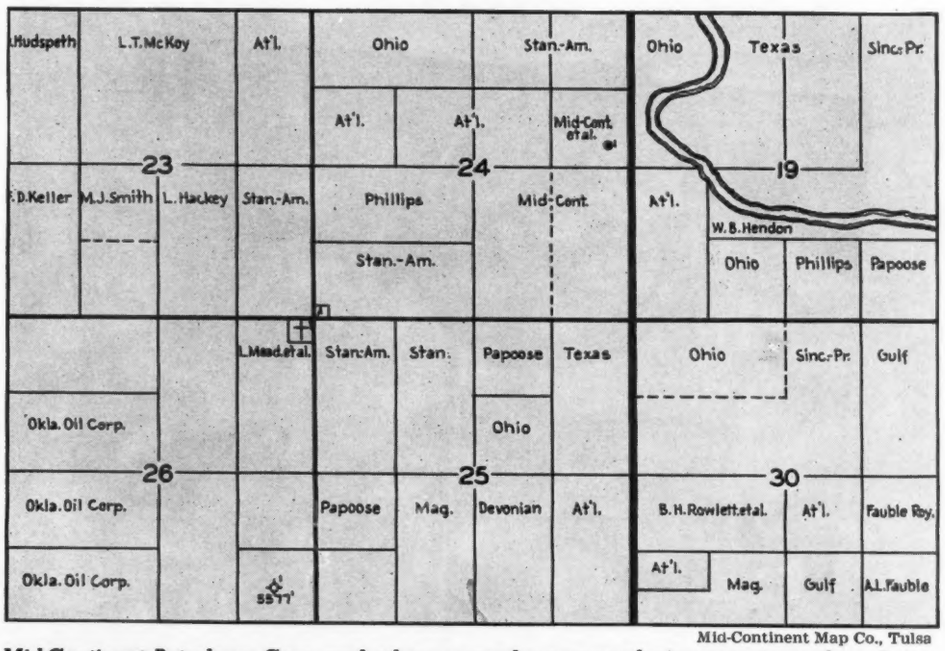
Phillips Petroleum Co. No. 1-A Neil, NE cor. section 15-23-2w, northeast of the Billings pool, Noble County, topped Arbuckle lime at 5,025 feet and was completed as a water disposal well at 5,200 feet, total depth.

Carter Oil Co. and others No. 1 Kolarik, C E half NW SW section 4-26-5w, Grant County, topped Wilcox sand at 5,657 feet, had second Wilcox sand at 5,837-52 feet, total depth, and was dry and abandoned.

Black Gold Oil Co. No. 2 Cooley, SW cor. section 25-28-4e, Kay County, was dry and abandoned at 2,187 feet, total depth.

Southern Oil Co. No. 1 Young, NE NE SE section 17-3n-7e, Pontotoc County, topped Bromide at 2,233 feet, had sand at 2,351 feet, hole full of sulfur water at 2,380 feet, total depth, and was dry and abandoned.

Wilcox Oil & Gas Co. No. 1 Neuman, SW SW SE section 30-7-23e, wildcat in McCurtain County, topped sand at 1,105 feet, Trinity series 1,120-1,275 feet, had a slight showing of oil at 1,284-1,324 feet, but had a hole full



Mid-Continent Map Co., Tulsa

Mid-Continent Petroleum Corp. and others opened a new producing area in northern Pottawatomie County in No. 1 Ne-Thah-Pea-Se, section 24-11-4

of water at 1,380 feet, total depth, and was dry and abandoned.

Shirley Clum and others No. 1 Moricle, NW NW SE section 16-4s-14w, wildcat in Tillman County, found broken lime and sand with a showing of oil at 2,435 feet, but was dry and abandoned at 2,780 feet, total depth.

Southern Oil Co. No. 1 Young, NE NE SE section 17-3n-7e, Pontotoc County wildcat, topped Bromide at 2,233 feet, sand at 2,351 feet, had a hole full of sulfur water at 2,380 feet, total depth, and was abandoned.

Six new wildcat tests in Oklahoma were reported, as follows:

In Atoka County, A. L. Larson and others No. 1 Mason, SW SE SE section 35-1n-14e, was rigging up machine.

In Cleveland County, Harper & Turner No. 1 Pollock, C W half NW NW section 13-9-2w, was a location for Wilcox sand or 7,700-foot test.

In Comanche County, J. A. Wolf No. 1 Castinus, SW SW SE section 30-4n-11w, was drilling at 103 feet.

In Osage County, National Refining Co. No. 2 Page, NW SW SE section 28-22-9, was a location.

In Pottawatomie County, Hightower and others No. 1 well, SE SE NW section 27-6-3e, was a rig. It was to be a Wanette sand test.

In Seminole County, J. F. Root No. 1 Cone, NW NE SW section 11-7-5, had dug cellar.

Pontotoc County

The largest of three oil wells completed in the Fitts field, Pontotoc County, was E. H. Moore No. 7-B Schauers, SE SE NW section 29-2n-7. After topping Hunton lime at 3,385 feet, stopping at 3,655 feet, total depth, and acidizing, it flowed 210 bbls. of oil net in one and one-half hours and made potential of 1,762 bbls. of oil. Gas gauged 3,200,000 feet.

Phillips Petroleum Co. No. 5 Bates, NW SE NW section 26-2n-7, had Bromide at 4,135 feet, McLish 4,314 feet, was bottomed at 4,321 feet and, after treating with acid, flowed 427 bbls. of oil gross in four hours, making potential of 970 bbls.

Simpson-Fell Oil Co. No. 2-B Bates, SW NW NW section 26-2n-7, topped Cromwell sand at 2,548 feet, total depth 2,645 feet, was shot and flowed 700 bbls. of oil in 24 hours through casing.

In the Jesse district, Deep Rock Oil Corp. and Burke-Greis Oil Co. No. 1 Garrett, NE NE SE section 3-1n-7, topped Hunton lime at 3,775 feet, was bottomed at 4,624½ feet, plugged back to 4,156 feet, was shot and acidized, flowed 555 bbls. of oil in 23 hours and produced an estimated 6,000,000 feet of gas.

H. L. Blackstock and others No. 2 Thompson, SE NE NE section 4-1n-7, flowed 5 bbls. of oil in 24 hours after shooting and acidizing. Later it flowed 30 bbls. in 12 hours, cutting 10 per cent water, and then flowed 29 bbls. of oil in 10 hours, with no water. Gas was estimated from 6,000,000 to 8,000,000 feet. Top of Hunton lime was 3,733 feet, total depth 4,600 feet, plugged back to 4,420 feet. Same operators' No. 1 Thompson, NE cor. section 4-1n-7, topped Hunton lime at 3,735 feet, Bromide 4,425 feet, total depth 4,591 feet, was shot and acidized, and flowed 46 bbls. of oil in 24 hours, with 5,500,000 feet of gas.

Benedum & Trees Oil Co. No. 3 Burke, SW NW NW section 33-5-5, had a hole full of water at 2,614 feet, total depth, and was abandoned.

Patsy Oil Co. No. 1 Magnuson, SW SE SE section 23-2n-7, an old Fitts well, was plugged back from 4,785 feet to 4,200 feet, drilled out to 4,340 feet, had a hole full of water and was abandoned.

New work in Pontotoc County: Clark & Cowden No. 1 Mayhue, NE SW SE section 20-2n-6, cellar and pits; Magnolia Petroleum Co. No. 2 Cradduck, SW SE SE section 24-2n-6, building rig; same company's No. 2 Chambers, NE SW NW section 36-2n-6, building rig; same company's No. 5 Morin, SW NW SE section 20-2n-7, cellar and pits; Magnolia Petroleum Co. No. 4 Norris, NE SE NE section 21-2n-7, rigging up rotary; Sinclair Prairie Oil Co. No. 6 Moody B, SE NW NW section 22-2n-7, cellar and pits; Amerada Petroleum Corp. No. 11 Smith, SE SW NW section 28-2n-7, building rig; Frank Newsom and others No. 2 Walker, SW NW SW section 11-4-6, location.

Seminole County

Atlantic Refining Co. No. 1 South Riddle, NE SW NE section 2-10-5e, Seminole County, topped Wilcox sand at 4,614 feet, was bottomed at 4,624 feet, and swabbed 370 bbls. of oil in 23 hours.

Pioneer Drilling Co. No. 1 Joseph, NW NE NE section 36-10-7, topped Cromwell sand at 3,601 feet, total depth 3,614 feet, swabbed 200 bbls. of oil and 80 bbls. of water in 10 hours and pumped 75 bbls. of oil and 50 bbls. of water in 24 hours.

I. T. Troup No. 1 Wrignt, SW NW NE section 32-7-6, found Boggy sand at 2,925 feet, total depth 2,960 feet, was shot and flowed 510 bbls. of oil in 24 hours.

Francis Oil & Gas Co. No. 1 Cravens, SE SE SW section 13-5-5, found Hunton lime at 2,331 feet, total depth 2,531 feet, was treated with acid and flowed 227 bbls. of oil net in 24 hours.

J. Lynch and others No. 1 Swan, NW NW NE section 24-5-5, an old well, was deepened from 2,668 feet to Dolomite at 2,785 feet, total depth 2,815 feet, pumped 84 bbls. of oil and 144 bbls. of sulfur water in 24 hours, and later pumped 65 bbls. of oil and 13 bbls. of sulfur water, recompleted.

Two new operations in Seminole County were reported. Winona-Jarvis-Holmes No. 1 Fish, NE NW NE section 19-7-8, was building rig. Arrow Drilling Co. and Kemrow Drilling Co. No. 1 Adams, NE NE SE section 33-8-7, was a location.

Hughes County

Pittsburgh Pipe & Supply Co. No. 4 Fish, SE NW NW section 20-7-8, Hughes County, topped Booch sand at 2,887 feet, was bottomed at 2,941 feet, swabbed 75 bbls. of oil in 24 hours, was shot, swabbed 130 bbls. of oil in 24 hours and pumped 95 bbls. of oil daily.

Two new operations in Hughes County were reported. Suppes & White No. 1 Bond, SW SW section 1-7-8, was rigging up machine. Pioneer Drilling Co. and Midwest Production Co. No. 1-A Bowlegs, C NE SE section 14-9-9, was a location.

Pottawatomie County

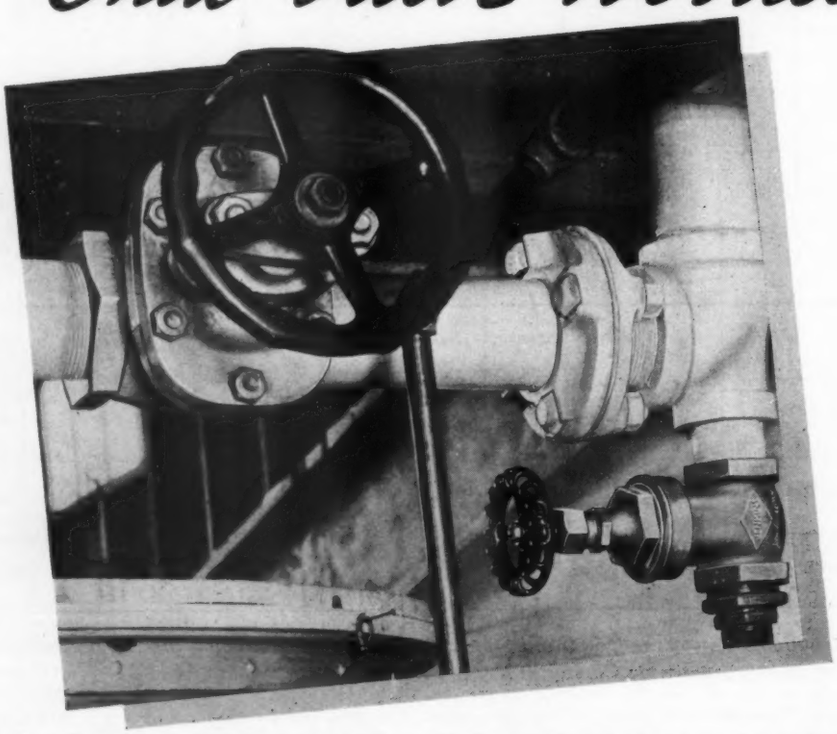
R. Olsen No. 3 Junk, SW NE SE section 32-11-4e, Pottawatomie County, found Earlsboro sand at 4,368 feet, was bottomed at 4,416 feet and flowed 105 bbls. of oil in 24 hours after a shot.

Stanolind Oil & Gas Co. and Amerada Petroleum Corp. No. 4 Rushing, NW SW SE section 32-11-4e, Shawnee pool, was shot and swabbed and flowed 111 bbls. of oil in 24 hours, reshot and swabbed and flowed 150 bbls. of oil in 24 hours. Top of Earlsboro sand was 4,425 feet, total depth 4,476 feet.

Denver Producing & Refining Co. No. 2 Risenhoover, SE NE NE section 14-7-4, flowed 355 bbls. of

A COMBINATION THAT

Ends Valve Worries



Jenkins Iron Valves will prevent costly trouble on large lines like the famous Jenkins Bronze Valves do on small lines

"Jenkins throughout"... is the valve specification for hundreds of plants and buildings today. Experienced architects, engineers and buyers know that it is economy to use "the best" in IRON as well as bronze valves.

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JENKINS VALVES
BRONZE—IRON—STEEL

oil in 24 hours from Earlsboro sand topped at 3,135 feet, total depth 3,385 feet.

Rischer & Clark No. 1 Brown, NE SE NE section 15-7-4, an old Pottawatomie County well, was deepened from 3,650 feet to 3,996 feet, plugged back to 3,992 feet, acidized, pumped 50 bbls. of oil net in 24 hours and was recompleted.

Denver Producing & Refining Co. No. 1-A Clour, SW SE SE section 11-7-4, was a rig.

Magnolia Petroleum Co. No. 2 Jones A, NW SE NE section 18-7-4, was rigging up rotary.

Osage County

Powers & Quinlan No. 10 Osage, SW SE SE section 26-24-8, Osage County, found Chat at 2,150 feet, was bottomed at 2,179 feet, and pumped 50 bbls. of oil daily.

O. H. Pettigrew No. 8 Osage, NW SW SE section 11-23-11, had Bartlesville sand at 1,475 feet, total depth 1,540 feet, and was completed as a 5-bbl. pumper.

F. A. Haver No. 10 Osage, SE SW section 16-23-11, was completed as a 5-bbl. pumper in Burgess sand at 1,767-91 feet, total depth.

H. Zelsman No. 3 Osage, NE NW SW section 26-27-11, had sand at 1,004 feet, total depth 1,038 feet, and pumped 5 bbls. of oil daily.

The following tests were completed as input wells: Phillips Petroleum Co. No. 62 Osage, NE SE NE section 21-25-12, total depth 1,540 feet; Wolverine Oil Co. No. 18 North Avant Unit, NE NE SW section 31-24-12, at 1,583-88 feet, total depth, in Bartlesville sand; same company's No. 24 North Avant Unit, NW SW SW section 31-24-12, at 1,755 feet, total depth; top of Bartlesville sand, 1,622 feet.

New work in Osage County: Mid-Co. Oil Corp. No. 2-A Osage, SE SW SE section 18-22-10, machine; Sinclair Prairie Oil Co. No. 14 Osage, NW SW SW section 30-25-8, location; H. C. Zelsman No. 4 Osage, SE SE NW SW section 26-27-11, location.

Producers Co. No. 11 Pettit, SE NE SE section 20-23-8, an old Osage County well, old total depth 2,619 feet, was to be deepened. It had 6,000,000 feet of gas from Burgess sand at 2,480-85 feet.

Tulsa County

A sixth gasser was completed in the Wheatley pool, at the west edge of the City of Tulsa, Tulsa County. It was Dan O'Shea No. 2 Tulsa, SE section 4-19-12. It tested 9,500,000 feet of gas from sand at 1,284-88 feet.

Okmulgee County

A second well has been completed in the new Wilcox sand pool opened in Okmulgee County recently at Lease Investment Co. and J. Garfield Buell No. 1 Reneau, SW SE NW section 4-13-11, which still is flowing from 130 to 135 bbls. of oil daily. The newest well is the Lease-Buell No. 1 Replogle, NE NW SW section 4-13-11. It found Wilcox sand at 3,160 feet, was drilled in only a few inches, flowed 52 bbls. of oil the first hour and then settled to a 40-bbl. an hour average. The Texas Co. was reported connecting lines to take the oil. The operators have about 400 acres of leases in the vicinity of the well. Dry holes on every side but one indicate the pool will be small in area, although oil men thought it would yield eight or 10 good producers.

Frierson & Kirchner have a producer on land owned by Will Morton in SE NE SE section 27-14-10, northwest of Nuyaka. It flowed 300 bbls. of oil in 24 hours from Dutcher sand at 2,675 feet.

Garvin County

Cox & Hamon No. 4 Harris, NE SW NW section 32-1n-3w, Garvin County sector of the Tussy pool, topped black shale at 3,250 feet and was dry and abandoned at 3,338 feet, total depth.

Texas Co. No. 16 Derdeyn, NE SW NE section 17-1n-3w, was a location for a new Garvin County test. Cox & Hamon No. 1 Tussy, NE NE SE section 31-1n-3w, was a location.

Cotton County

H. W. Chamberlain No. 1 Berandzin, NE NW NW section 14-2s-11w, was abandoned at 18 feet.

Other New Operations

Gulf Production Co. No. 1 Schuster, SW SW NE SW section 15-12-3w, Oklahoma County, was building rig.

S. P. McGill No. 5 Gilbreath, NE SW SE section 5-1n-15, Atoka County, was shut down at 103 feet, total depth.

LeFlore Gas & Electric Co. No. 22 Orr, NE NW

WHETHER your service is a matter of ounces — hundreds of pounds pressure — or, accurate maintenance of liquid levels — Fisher will engineer and build the correct size and type controller to meet your exact operating conditions — and, assure prompt deliveries. Special Fisher manufacturing facilities and ingenious methods make these prompt deliveries possible.

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For either pressure reducing or pressure relief service; suitable for steam, air, gas, water and all other fluids.

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Furnished with pilot mounted on diaphragm valve as shown or with pilot for panel board mounting. Sizes: ½" to 16" and for all pressures from 5 to 500 lbs.

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201 SOUTH FIRST AVENUE, MARSHALLTOWN, IOWA

SW section 6-6-23, LeFlore County, was drilling at 400 feet.

In Grady County, Magnolia Petroleum Co. No. 8 Harrison, NW SE NE section 28-3n-5w, was a location.

In Carter County, Wasteka Oil Co. No. 2 Burton, SE NW NW section 31-1s-2w, was rigging up rotary tools; Carter No. 2 Junior Perkins, SW NE SE section 4-1s-3w, was a location; same company's No. 43 Ward, NW NE NW section 6-4s-3w, was rigging up machine; same company's No. 40 Gubbel, CNL SW NW section 24-4s-3w, was a location.

In Stephens County, M. Green No. 7 Green, NE NE SE section 27-1s-5w, was rigging up machine.

In Kiowa County, E. A. DeBolt and associates No. 1 Fred Burnett, SW NE NE section 30-7-20w, was a location.

Kansas Fields

(Continued from Page 93)

Amerada Petroleum Corp. No. 5 Hilger A, SW SE NW section 16-26-4w, location; same operator's No. 4 Moore, SE NE SE section 8-26-4w, pits; Sinclair Oil & Gas Co. No. 1 Mueller, SE SW NW section 19-24-4w, location.

Butler County

Roth & Faurot and others No. 3 King, C E half NE SW section 17-24-4e, Butler County, showed for 5 bbls. of water and was dry and abandoned at 2,527 feet, total depth.

Polhamus and others No. 6 Semisch, SE NW NE section 5-28-7e, had sand at 2,714 feet, total depth 2,739 feet, plugged back to 2,737 feet, was shot and pumped 35 bbls. of oil and 20 bbls. of water in 24 hours.

Cities Service Oil Co. No. 27 Lathrop, NE SW NW section 17-23-4e, Elbing pool, topped Kansas City lime at 1,938 feet, total depth 2,081 feet, was acidized, pumped 300 bbls. of oil and 25 bbls. of water in 18 hours, potential 423 bbls. of oil.

Cities Service Oil Co. No. 28 Lathrop, C SW NW section 17-23-4e, was a machine. Rex & Morris and others No. 1 Stephens, SW SW SE section 35-23-3e, had material on ground.

Greenwood County

A. M. Landon No. 7 Texas-Johnson, NW SE NE section 22-24-12e, Greenwood County, found sand at 1,611 feet, total depth 1,640 feet, was shot and was estimated good for 25 bbls. of oil daily.

Oko Oil Co. No. 5 Pinon, NW NW NE section 27-23-13e, had a hole full of water at 1,809 feet, total depth, and was dry and abandoned.

Katz Oil Co. No. 2 Life, NW NW NE section 13-26-9e, was rigging up machine. Whittaker and others No. 3 Davis, SW SW NE section 8-28-11e, was rigging up machine. Luderman No. 1 Wright, C NE SW section 23-26-9, was a machine.

Chautauqua County

Miller and others No. 1 Winninger, NE cor. section 2-35-9, Chautauqua County, had Mississippi lime at 1,900 feet, total depth 1,935 feet, and produced 500,000 feet of gas. F. S. Craver No. 1 Floyd, NW SW SE section 26-33-12, was dry and abandoned in Siliceous lime at 2,005-12 feet, total depth. Sinclair Prairie Oil Co. No. 14 Casement, NW NW SW section 33-33-11e, found water at 2,065 feet, was dry and abandoned at 2,070 feet, total depth. Scott and others No. 1 Martin, SE SW NW section 17-33-13, had a hole full of water in Siliceous lime at 2,100-2,110 feet, total depth, and was abandoned.

New work in Chautauqua County: Harrison No. 1 Brown, NE SE NE section 19-34-10, wildcat, drilling at 190 feet; Sinclair Prairie Oil Co. No. 3 Townsend, NW NW SE section 20-34-9, location; Barbara Oil Co. No. 3 Gorham, NE SE NW section 23-32-10, drilling below 1,300 feet.

Woodson County

Jones and others No. 1 Figge, NW SE NW section 27-23-14e, Woodson County, had a hole full of water and was dry and abandoned at 1,700 feet, total depth.

Woodson Pipe Line Co. No. 8 Winterscheid, SW SW SE section 6-24-14, topped Mississippi lime at 1,686 feet, had pay at 1,700-1,717 feet, total depth, was acidized and pumped 100 bbls. of oil and 5 bbls. of water daily.

Braden & Aikman No. 1 Arnold, NE SW NE section 35-23-14, had spudded.

Seward County

United Production Co. No. 1 Central Life, C NE section 7-31-34w, Seward County, produced 2,000,000 feet of gas and was completed at 2,680 feet, total depth, after a shot at 2,650-80 feet.

Additional New Work

First reports of new operations in Kansas not otherwise mentioned were as follows:

In Barber County, Barbara Oil Co. No. 1 Holmes, C SE section 28-33-13w, cellar; Helmerich & Payne and others No. 1 Blunk Estate, C SE section 18-34-13w, wildcat, moving in material; Olson Oil Co. and Skelly Oil Co. No. 1 Elsea, SW SE NW section 27-32-14w, location.

In Elk County, Veedles Supply & Development Co. No. 1 Smay, NW NW SW section 28-28-12, an old well being deepened from 840 feet, set 5-inch casing at 1,214 feet and was shut down; Denton & Morrow No. 8 Burke, SE SW SW section 14-29-10, spudded.

In Grant County, Parrish No. 1 Patterson, C SW section 25-28-37w, drilling at 1,750 feet; same operator's No. 1 Smith, C NE section 36-28-37w, location; United Production Co. No. 1 King, C S half section 20-29-35w, location; same company's No. 1 Blackwelder, C section 24-29-35w, rigging up rotary; same company's No. 1 Sewing, C S half NE section 25-29-35w, location; same company's No. 1 Schwerfeger, C SW section 36-29-35w, drilling at 2,400 feet; Columbian Fuel Co. No. 1 Hickok, C SW section 9-29-36w, rigging up rotary; United Production Co. No. 1 Hickman, C S half section 23-30-35w, location; Panhandle Eastern Pipe Line Co. No. 1 McClelland, C S half section 36-30-35w, location; United Production Co. No. 1 Teters, C section 26-30-36w, location; same company's No. 1 Pinney, C section 27-30-36w, location; same company's No. 2 Teters, C section 35-30-36w, location; Panhandle Eastern Pipe Line Co. o. 1 Towles, CSL N half N half section 26-30-37w, set 7-inch casing at 2,372 feet; United Production Co. No. 1 Blake, C NW section 21-30-36w, drilling at 1,800 feet; same company's No. 1 Julian, C NW section 26-30-35w, set 7-inch casing at 2,393 feet; Panhandle Eastern Pipe Line Co. No. 1 Nese, C section 30-30-37w, drilling below 600 feet.

In Marion County, Lariuax-Irwin No. 5 Merrilott, SE NW SE section 23-17-4e, rigging up rotary.

In McPherson County, E. B. Shawver and Magnolia Petroleum Co. No. 1-B Klassen, SE NE NW section 21-19-1w, an old well being deepened, set 7-inch casing at 3,126 feet, drilling cement; Continental Oil Co. No. 4 Graber, NE NW SE section 29-21-1w, location.

In Kingman County, Carter Oil Co. No. 1 Davis, NE NE NE section 24-28-8w, wildcat, building rig.

In Jackson County, Lemmick Oil Co. No. 1 well, NE cor. section 26-9-14e, moving in machine.

In Ness County, Oriental Oil Co. No. 1 Tenny, NE NE SW section 19-18-25w, rig; J. H. Carpenter No. 1 Shiner, NW NW NE section 19-18-25w, location.

In Stafford County, Atlantic Refining Co. No. 2 Pounds, C E half W half NE section 27-24-13w, drilling at 1,818 feet; Skelly Oil Co. No. 1 Kipp, SW SW SE section 23-25-14w, cellar; Stanolind Oil & Gas Co. No. 3 Allen, NE NW SE section 31-22-11w, rigging up rotary; same company's No. 8 Romarek, NE SE SE section 30-22-11w, moving in tools.

In Sedgwick County, Magnolia Petroleum Co. No. 1 Rimel, NW NW SW section 20-27-2e, location; D. W. Murfin and others No. 1 Martin, SE SE NW section 18-28-1e, location.

In Scott County, Atlantic Refining Co. No. 2 Dague, SE SE NW section 14-20-33w, cellar.

In Stevens County, Panhandle Eastern Pipe Line Co. No. 1 Mason, C NW section 8-31-37w, location; United Production Co. No. 1 Winter, C NW section 13-31-35w, location; Benedum & Trees No. 1 Watkins, C NW section 34-34-38w, set 7-inch casing at 2,597 feet.

In Sumner County, Stelbar Oil Corp. No. 6 Frankum, NW NE NE section 32-31-1w, rig.

In Rooks County, Phillips Petroleum Co. No. 1 Maddy, C SE NE section 36-8s-18w, building rig; John Levell No. 3 Baxa, SE SW SW section 12-9-17w, building rig.

In Rush County, Wakefield & Brouk No. 1 Kerbs, NW NW SE section 11-17-16w, cellar.

Southwest Texas Fields

(Continued from Page 86)

developments in three sectors. In the Barbacoas field of Starr County, two tests are active. Merren & Jefferies No. 1-A Starr County Cattle Co. is setting casing at total depth 5,640 feet, in Conroe sand. H. Mode No. 1 S.C.C.C. is coring ahead after unsuccessfully testing sand at 2,522-28 feet.

In the LaBlanca area of Hidalgo County two deep tests are drilling. Atlantic Refining Co. No. 1 Lewis, a south offset to the Pantana No. 1 McDougal producer set 7-inch casing at 8,546 feet in hard tight sand with a distillate odor, and is perforating for production.

In Willacy County, the Shell Petroleum Corp. No. 1 Yturria, discovery well of La Sal Vieja field, was abandoned at total depth of 10,286 feet after a workover job. The rig was moved to the No. 2 location, where the second test is getting under way.

Texas Statistics

The 1936 Statistical Report of the Oil and Gas Division of the Texas Railroad Commission has just been released. The report includes tables showing the number of operators, production, pipe line runs, and other pertinent information for each field in Texas. Copies of the report are available by making request of Railroad Commission of Texas, Austin, Tex. There is no charge for same.

INTERNATIONAL PETROLEUM EXPOSITION EXECUTIVE COMMITTEE

Plans for the May 14 to 21, 1938, International Petroleum Exposition by the executive committee, will include increased outside exhibit space, greater exhibit facilities and a larger Tulsa oil show. The members of the committee are: Alf G. Heggem, W. G. Skelly, president, Frank J. Hinderliter; top row, W. M. Bovaird, Frank O. Prior, H. R. Powers and W. B. Way, general manager.

California Field Report

WILMINGTON FIELD IS STILL MOST ACTIVE ONE IN STATE

By
L. P. STOCKMAN

LOS ANGELES, Calif., Aug. 16.—The Wilmington field of Los Angeles Basin continues to be the most active one in California from a drilling standpoint, and the field's crude oil production during the first 10 days of August was exceeded only by the Kettleman North dome, Midway-Sunset and Long Beach fields. The Wilmington field has a potential daily production of approximately 90,000 bbls. and should exceed the 100,000-bbl. mark within a fortnight. There have been 212 wells completed in the field. During July operators completed 56 new oil wells, which showed an aggregate initial daily production of 36,706 bbls. No drilling permits have been issued yet by the Long Beach Harbor Commission, but definite action is expected within the next 10 days. Approximately 25 wells are expected to be under way in the eastern end of the Wilmington field within 30 days after the present restrictions are lifted, and 50 wells within 60 days. At a recent election Long Beach voted to remove drilling restrictions in that area west of the flood-control channel and as far south as Ocean Boulevard, which is located north of and approximately parallel to the shore line at Long Beach harbor. Due to complex structural conditions in the Wilmington field, it is difficult to predict the probable limits of production in the Long Beach section of the field. Several engineers say production will extend beyond the center of the Los Angeles flood-control channel.

The Union Pacific Railroad Co., largest holder of undeveloped acreage, and General Petroleum Corp., discoverer of the Wilmington field, head the list of producers in this field. Union Pacific tops the list with a current daily production of 15,210 bbls., followed by General Petroleum Corp. with 10,140 bbls., Royalty Service Corp. with 2,245 bbls. and Bankline Oil Co. with 1,718 bbls. In as much as operators in the Wilmington field have consistently refused to conform with the existing curtailment program, crude oil production shows a substantial fluctuation from day to day, reflecting the demand and ability of independent refiners to absorb production. In the absence of any attempt to conform with curtailment, major purchasing companies have consistently refused to provide a pipe line outlet and post a schedule of prices which would be paid for current commitments. With few exceptions, purchasing companies in California do not post crude price schedules for any field in which they do not produce or purchase oil. During the first six months of 1937 the Los Angeles Harbor Department's royalty oil from property leased to operators totaled 52,240 bbls. and returned a revenue to the department of $43,996.32. This is a net return of a little in excess of 84 cents per barrel and indicates that a portion of the royalty oil has been sold below 85 cents per barrel, the low of 81.7 cents having been recorded in June. The department's royalty oil in January was 2,348 bbls. and the revenue $1,994.49; February, 6,523 bbls. and $5,528.21; March, 7,450 bbls. and $6,457.25; April, 8,522 bbls. and $7,273.30; May, 14,463 bbls. and $12,179.64 and June, 12,934 bbls. and $10,563.43.

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

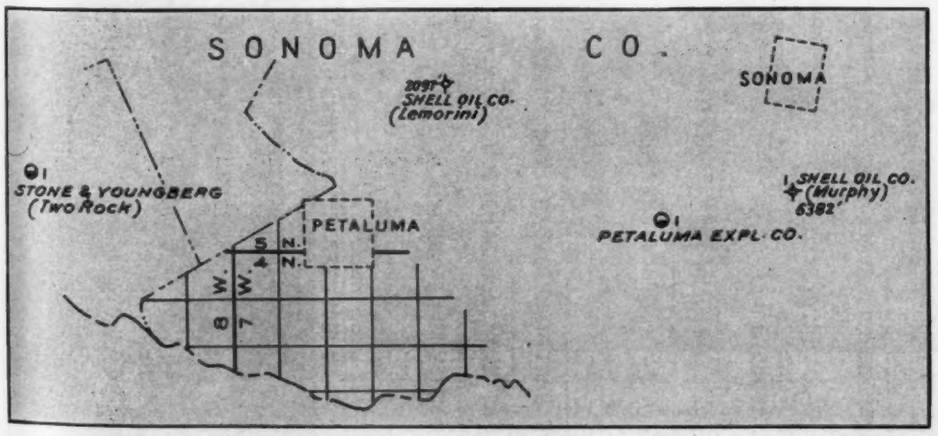
	Aug. 5		July 29			
	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Intercoastal-domestic:						
Crude oil	60,035	8,576	.....	.....	60,035	.....
Diesel and gas oil	.....	.....	.....	.....	176,726	151,541
Gasoline	128,630	18,376	191,697	27,385	2,619,449	3,994,742
Kerosene	.....	.....	.....	.....	256,032	888,702
Foreign exports:						
Crude oil	176,175	25,168	665,972	95,139	8,496,751	5,569,950
Fuel oil	149,441	21,349	213,561	30,509	8,693,844	6,267,820
Diesel and gas oil	120,096	17,157	201,947	28,850	4,489,101	3,609,525
Gasoline	226,720	32,389	320,694	45,813	4,946,753	4,310,069
Kerosene	14,686	2,098	157,691	22,527	1,426,555	881,553
Other unfinished oil	.....	.....	69,638	9,948	847,290	112,788
Coastwise-domestic:						
Crude oil	60,177	8,597	246,208	35,173	2,445,293	3,938,496
Fuel oil	389,498	55,643	297,374	42,482	8,987,640	5,610,577
Diesel and gas oil	63,497	9,071	26,751	3,822	1,297,291	818,204
Gasoline	479,574	68,511	535,435	76,491	9,322,400	7,775,544
Kerosene	4,488	635	2,999	428	249,333	131,782

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic:						
Diesel and gas oil	.....	.....	.....	.....	152,932	.....
Gasoline	.....	.....	.....	.....	25,778	227,419
Asphalt	72,707	10,387	.....	.....	278,026	138,097
Lubricants	9,615	1,374	.....	.....	22,472	34,084
Foreign exports:						
Crude oil	89,013	12,716	.....	.....	1,776,342	2,108,005
Fuel oil	29,297	4,185	26,984	3,855	1,262,611	1,668,558
Diesel and gas oil	141,090	20,156	.....	.....	1,849,747	1,083,307
Gasoline	111,076	15,868	.....	.....	2,998,256	2,315,298
Kerosene	86,929	12,418	.....	.....	584,196	459,729
Lunbricants	47,160	6,737	.....	.....	372,775	203,169
Coastwise-domestic:						
Fuel oil	152,444	21,778	147,797	21,114	3,908,797	4,018,311
Diesel and gas oil	17,916	2,559	39,117	5,588	624,856	443,271
Gasoline	181,356	25,908	67,573	9,653	2,868,036	3,113,282
Kerosene	.....	.....	39,619	5,660	162,675	102,798

New Wells

The completion list during the current week was somewhat smaller than usual, but operators will probably make up for lost time, as numerous wells are standing cemented on top of the pay or being prepared for production tests. Royalty Service Corp., one of the most aggressive operators in the Wilmington field, has completed No. 1 Price flowing 669 bbls. of 17.7-gravity oil daily and No. 1 Chadwick flowing 171 bbls. of 17.3-gravity oil per day. The former was bottomed at 3,630 feet and the latter at 3,604 feet, with a 6⅝-inch combination string which was cemented through perforations at 2,853 feet and has perforations opposite the oil zone at 2,853-2,914 feet, 3,108-3,138 feet and at 3,344-3,604 feet. Caminol Co., Ltd., completed its first producing well in the Wilmington field a few days ago when No. 1 Community was brought in flowing 647 bbls. of 15.9-gravity oil cutting 4.1 per cent daily from 3,630 feet. This new well was finished with 8⅝-inch casing and is flowing through a 42/64-inch bean. Burnoel Petroleum Corp. No. 586-A-1 has been completed pumping 238 bbls. of 16.8-gravity oil daily from 3,520 feet. No. 2 Community, of Union Pacific Railroad, proved to be a relatively small well upon completion at 3,477 feet, as it tanked only 123 bbls. of 15.9-gravity oil daily during the initial 24 hours following completion. This new well is flowing through 24/64-inch bean. The initial production showed a cut of 18 per cent but this has been reduced to approximately 6 per cent. D. D. Dunlap has completed No. 10 Wilmington flowing 149 bbls. of 16.4-gravity oil daily through a 28/64-inch bean from 3,420 feet. Numerous new locations have been staked or mapped by operators in the Wilmington field and present indications point to aggressive development for at least the next three months and if the eastern end of the field comes up to expectations, a consistent drilling program in the Wilmington field during the remainder of the current year is expected. The new work already mapped out in the Wilmington field indicates that drilling operations during 1937 will be the largest undertaken for almost a decade.



Two new wildcats are being drilled near the town of Petaluma in Sonoma County, about 35 miles northwest of San Francisco, by Stone & Youngberg and Petaluma Exploration Co.

Kettleman Hills

The Kettleman North Dome Association has apparently proved up the existence of a substantial thickness of Eocene oil sand in the Kettleman North dome field, as its outpost, No. 418-J, in the extreme western end of the field in section 18-21-17, was still coring oil sand a few days ago at 10,832 feet. The formation cored in the lower part of this hole is not a solid body of oil sand, but consists of oil sand, shale and a fine sand which is not believed to carry water. If the Eocene rocks conform with the Temblor, deeper production should be developed on top of the structure around 9,000 feet.

As a result of the coring and production already assured in Kenda's western outpost, Standard Oil Co.

has leased the Lillis-Welsh acreage, in section 24-21-16, but is not obligated to undertake immediate development. Union Oil Co. drilled a deep test in the northwest corner of this property and, while the well showed oil and gas, the company was unable to complete it as a commercial producer. The well was abandoned and the property quitclaimed. Superior Oil Co. has denied any intention of undertaking deep development at the present time and No. 15 Huffman, which has created interest during the past week, will be returned to production after being cleaned out and reconditioned.

Kettleman North Dome Association completed No. 2-34-J flowing 2,260 bbls. of 33.4-gravity oil and 1,400,000 feet of natural gas per day from 7,940 feet. Drilling operations in the Kettleman North dome field have been declining during the past several months, but the number of locations staked and new rigs in course of construction indicate the probability of a slight increase during the next few months.

El Segundo

The El Segundo field of Los Angeles Basin, which revived a few months ago after a period of inactivity extending over a year, is showing greatly increased drilling and several additional wells are scheduled to be started in the near future. The discovery well in the El Segundo field was drilled by Republic Petroleum Co. and was completed pumping approximately 300 bbls. per day. After a delay of several months, Republic Petroleum Co. drilled a second well and this, too, was completed on the beam as it did not have sufficient natural gas to result in a natural flow. Subsequent completions east and south of the Republic Petroleum Co.'s holdings showed sufficient gas and were accordingly brought in as flowing wells. For a long time activity centered in the southern part of the field and then the Texas Co. completed an excellent producer on the Security lease and the scene of work shifted up into the northwest area which has since become the center of activity. At the present time the limits of production have not been defined to the north and this town lot area may yield excellent producing wells during the next several months.

Round Mountain

In the Coffee Canyon section of the Round Mountain field of Kern County, California Western Oil Co. has completed well No. 3 in section 12-28-28 pumping 441 bbls. of 16.1-gravity oil per day from 2,030 feet. The hole was finished with 58 feet of 6⅝-inch liner carrying 47 feet of 80-mesh perforations. The crew from this well has been moved over to well No. 4 and preparations are under way to begin making hole. In the older section of the Round Mountain field, Honolulu Oil Corp. has completed well No. 12 in section 18-28-29, pumping 218 bbls. of 16.5-gravity oil per day from 2,057 feet after the hole had been finished with 60 feet of 7-inch liner including 43 feet of 130-mesh and established a maximum potential daily production of 445 bbls. a few days after completion. Honolulu has two additional wells drilling in this field and has completed new rigs for Nos. 22 and 25. In the Pyramid section of the field Shell Oil Co. has completed No. 1-2 Olcese Estate pumping 91 bbls. of 16.5-gravity oil per day from 1,740 feet but indications point to much higher production after the well gets under way. This well was carried down in search of a second productive horizon but failed to find anything after the bit left the Olcese zone. The hole was bottomed in granite at 2,906 feet but was plugged back to the completion depth and finished with 57 feet of 6⅝-inch liner including 38 feet of perforated.

Midway-Sunset

No new wells were completed in the Midway-Sunset field during the current week although Union Oil Co. successfully recompleted No. 2 Boss in section 10-11-23 pumping 99 bbls. of 19.8-gravity oil per day after reconditioning the hole, bottomed at 5,500 feet. National Oil Co., headed by Ross McCollum, has taken over the property and equipment of Hugh B. Evans Co., consisting of 21 wells capable of producing 1,050 bbls. of crude oil per day. The wells will be cleaned out and reconditioned. The Texas Co. is scraping the walls in well No. 23 in section 32-32-24 preparatory to bringing the well on production. The company has been packing the hole back of the perforations with gravel, and if this operation is as successful as heretofore No. 23 should be brought in pumping about 300 bbls. per day. Previous to packing in the gravel the hole is scraped out to a depth of about 24 inches.

San Joaquin Basin

Several new wells were completed in various fields of the San Joaquin Basin during the past week but none registered large production. In the Kern River field Standard Oil Co. has completed No. 6 Ward fee in section 24-28-27 pumping 115 bbls. of 14.5-gravity oil and 1 bbl. of water per day from 2,030 feet. No. 7 Ward fee, which is standing cemented at 1,775 feet, should be ready for a production test within a few days and should prove equally as good as No. 6 Ward fee. No. 3 Seven Spot of Oils Inc. of California was brought in pumping 110 bbls. of 14.3-gravity oil per day from 1,290 feet after the hole had been finished with 43 feet of 6⅝-inch liner carrying 34 feet of 200-mesh perforations. Production started off cutting 8 per cent, but is expected to clean up after the well has had a chance of cleaning itself out. Tom G. Taylor is president and general manager of the company and R. T. Morris is superintendent.

In the McVan section of the Mount Poso field, Hobbee Oil Co. has completed well No. 2 in section 14-27-27, but the output of 43 bbls. per day on the beam was still cutting 20 per cent after the well had been on production several days. This well was finished at 1,195 feet with a 10¾-inch water string landed and cemented at 1,142 feet. In the Fruitvale field of Kern County Tarr & McComb have recompleted their No. 4 Fairhaven pumping 201 bbls. of 19.5-gravity oil per day from 3,504 feet after the hole had been redrilled and deepened to 3,688 feet and then plugged back to the completion depth. In the Lost Hills field Tide Water Associated Oil Co. completed No. 12-D Williamson in section 11-26-20, pumping 325 bbls. of oil per day cutting 70 per cent from 1,654 feet, but it is thought settled production will be around 25 bbls. Wells in this section of the field show good production upon completion but decline at a rapid rate. The company is at present drilling ahead in No. 9-R-3 in section 2-26-20 and is building rig for No. 10-E-3 in section 3-26-20. Standard Oil Co. is building rig for No. 4 United in section 2-26-20 and has location staked for well No. 5. In the Mountain View field Ohio Oil Co. has completed No. 2-B Derby in section 33-30-29, but the initial daily production was only 70 bbls. of 26.9-gravity oil per day from 5,222 feet.

Coastal Area

Drilling operations in the Coastal area comprising Ventura, Santa Barbara and San Luis Obispo counties have shown a substantial increase during the past several months. In the Gato Ridge field of Santa Barbara County the Petrol Corp. has completed No. 43-A Tognazzini pumping 785 bbls. of 14.5-gravity oil per day from 3,888 feet and while locations have been staked for additional development it appears probable that no further drilling will be undertaken for 30 days. In the Shiells Canyon district of Ventura County, Petroleum Securities has completed No. 1 Calumet flowing 359 bbls. of 33.1-gravity oil and 400,000 feet of natural gas per day through a 24/64-inch bean. This well, scheduled for abandonment a few weeks ago, has extended the productive limits of the field in section 3-3-19. The well was bottomed at 4,763 feet, but plugged back to 3,840 feet. Pressures show 425 pounds on the tubing and 1,200 pounds on the casing. In the Santa Maria Valley field, Pacific Western has finished drilling operations on No. 4 Hobbs at 4,521 feet in Franciscan basement. Top of the Monterey was logged in this well at 4,156 feet and consequently commercial production is expected. No. 1 Rosenbloom, a joint test of the Hancock Oil Co. and the R. R. Bush Oil Co. has been bottomed in the Franciscan at 5,058 feet with top of the Monterey picked up at 3,864 feet.

Los Angeles Basin

Considerable redrilling and reconditioning work has been started in the Huntington Beach field of Los Angeles Basin, especially in the town lot area immediately adjacent to the ocean front. Several wells in this section are being redrilled and some have been started from the grass roots. This resumption of activity is due to recent legislative action opening up the tidelands for exploitation by the use of groins or islands and operators having crooked holes have started deviating them into areas beneath the ocean that have not become depleted. When this whipstocking campaign was under way operators did not make any kind of agreement with respect to the location of the bottom of the hole, with the result that a number of wells were centered in a relatively small area. Present work was started to whipstock wells away from the

(Continued on Page 106)

STANDARD OIL CO. OF CALIFORNIA AND UNION OIL CO.

Crude oil prices at the well effective June 22, 1936

Gravity—	Signal Hill (Long Beach)	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda-Brea Canyon	Athens-Rosecrans	Dominguez	Elwood Terrace	Torrance	Richfield	Whittier E. Coyote (La Habra)	Montebello	W. Coyote Hills	Santa Fe Springs	Mountain View	Elk Hills Buena Vista Hills Midway-Sunset Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Kettleman Hills	Santa Paula*	Orcutt*
14-14.9	$.80	$.79	$.74	$.78	$.79	$.80	$.76	....	....	....	$.80	$.76	$.76	$.77	$ .78	....	....	$.70	$.70	$.70	....	....	$.70	....
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	....
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.70	$.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	....	.80	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.71	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	....	.82	.76	.76	.77	.78	....	....	.70	.70	.70	....	....	.73	.72
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	....	.85	.76	.78	.77	.78	....	$.70	.74	.74	.71	$.76	....	.75	.74
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	....	.88	.78	.82	.77	.80	....	.70	.78	.78	.72	.70	....	.77	.77
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	....	.91	.80	.85	.77	.84	$.78	.73	.82	.82	.74	.70	....	.79	.80
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	....	.93	.84	.89	.79	.88	.78	.77	.87	.86	.78	.72	....	.82	.83
23-23.9	.95	.86	.77	.96	.99	1.02	.96	$.84	$.79	....	.96	.88	.93	.82	.92	.78	.80	.92	.90	.82	.76	....	.85	.86
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	....	.99	.91	.96	.85	.96	.82	.84	.97	.94	.86	.79	....	.87	.88
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	....	1.02	.95	....	.89	.99	.86	.88	1.01	.98	.90	.83	....	.90	.91
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	....	1.05	.98	....	.92	1.03	.90	.91	1.06	1.02	....	....	....	.92	.93
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	....	1.02	....	.96	1.06	.95	.95	1.10	1.06	....	....	....	.95	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	....	1.06	....	.99	1.10	.99	.99	1.15	1.10	....	....	....	.97	....
29-29.9	1.17	1.15	.93	1.18	1.18	F.O.B.	1.17	1.12	.93	....	....	1.09	....	1.03	1.14	1.03	1.02	1.20	1.14	....	....	....	.99	....
30-30.9	1.21	1.19	.95	1.22	1.21	our	1.21	1.17	.95	F.O.B.	....	....	....	1.07	1.17	1.08	1.06	1.25	1.18	....	....	....	1.01	....
31-31.9	....	....	....	....	1.24	Pipe	1.24	1.22	.97	Ship	....	....	....	1.11	1.21	1.12	1.09	1.29	....	....	....	....	....	....
32-32.9	....	....	....	....	1.27	Line	1.27	1.27	1.00	....	....	....	....	1.14	1.25	1.16	1.13	1.34	....	....	....	....	....	....
33-33.9	....	....	....	....	....	....	....	1.32	....	$1.28	....	....	....	1.18	1.28	1.20	1.17	1.38	....	....	....	$1.19	....	....
34-34.9	....	....	....	....	....	....	....	1.37	....	1.32	....	....	....	1.22	1.32	1.25	1.20	....	....	....	....	1.23	....	....
35-35.9	....	....	....	....	....	....	....	1.42	....	1.35	....	....	....	1.25	....	1.29	....	....	....	....	....	1.27	....	....
36-36.9	....	....	....	....	....	....	....	1.46	....	1.39	....	....	....	1.29	....	1.33	....	....	....	....	....	1.31	....	....
37-37.9	....	....	....	....	....	....	....	1.51	....	1.43	....	....	....	1.32	....	1.37	....	....	....	....	....	1.35	....	....
38-38.9	....	....	....	....	....	....	....	1.56	....	....	....	....	....	1.36	....	1.42	....	....	....	....	....	1.39	....	....
39-39.9	....	....	....	....	....	....	....	1.61	....	....	....	....	....	1.40	....	....	....	....	....	....	....	1.43	....	....
40-40.9	....	....	....	....	....	....	....	1.66	....	....	....	....	....	1.43	....	....	....	....	....	....	....	....	....	....

Newhall, McKittrick, Kern River, Kern Front and Round Mountain, 70 cents for all grades. *Posted by Union Oil Co. Same company's Brea Canyon schedule stops at $1.14 for 28 degrees and over, and Belridge and Lost Hills schedule stops at $1.32 for 37 degrees and over.

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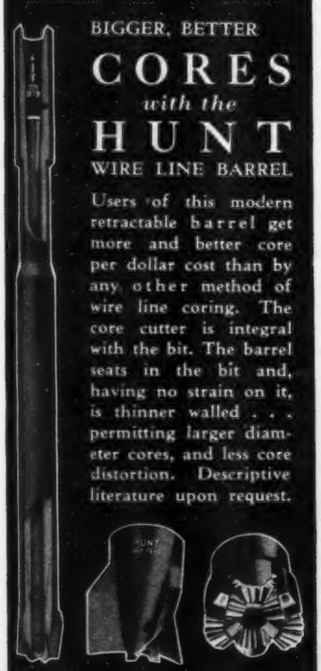

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Among Gulf Coast Drilling Contractors

Although new drilling on the Gulf Coast reflected further increase the past week, little change was reported in locations of contract rigs. Moves generally were limited to the fields in which the rigs already are busy.

Harry L. Edwards has completed another producing well for the Coast Petroleum Co. in the Dickinson field, Galveston County, and for Stanolind Oil & Gas Co. in the Hastings field.

W. Claude Smith, drilling for the Texas Co., has brought in No. 4 Hillegist at Tomball, and has moved off to new location.

Three tests are being drilled for the Texas Co. by Bowles & Co. One, located at Ganada, Jackson County, has just recently started operations with the test, No. 1 Niebuhr, now down below 2,400 feet. The other two are at Hull.

Conroe Drilling Co., drilling for itself on the Bonnie View Prospect in Refugio County, is down below 6,500 feet.

George Echols, who has just completed another good well for himself in the Heyser area, extending the field 2,000 feet further into Victoria County, has moved the rig to No. 6 Bennett, an east extension test. This contractor also has a rig working for Sinclair Prairie Oil Co. in the same field, the latter being about ready to test.

Carter Drilling Co., working for the Texas Co. at West Columbia, is down to 5,526 feet in No. 16 Abrams, where it has picked up a sand.

Otis W. Dyer has been making good time on Pure Oil Co. No. 1 Sealy-Hutchins at Dickinson and at latest report was coring at 7,960 feet. This contractor has just finished another good well, No. 2 Cockburn, for Atlantic Refining Co. at Magnet, in Wharton County, and has moved to No. 3 Cockburn, in which surface casing already has been run at 1,340 feet. Otis W. Dyer's rig in the La Blanca field of Hidalgo County is drilling an important test for the Atlantic Refining Co. The No. 1 Lewis has set casing at 8,546 feet and is perforating for production. The test is located in a south offset to a good producer in the deep high-pressure field. La Blanca is the deepest production in the Lower Rio Grande Valley section at present.

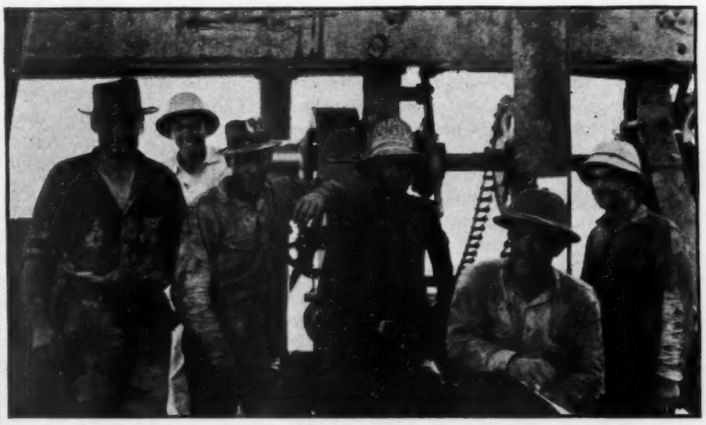
Other Dyer rigs are drilling for the Atlantic Refining Co. in the McCampbell field of Aransas and San Patricio counties, South Texas. The No. 1-B Guarantee Bond & Mortgage is being washed in for completion in the deep 7,100-foot sand. No. 2-A Murray is running casing on that sand. The same company's No. 2 Scrivener is coring for the sand, below 7,070 feet. O. W. Dyer, Jr.'s rig is drilling the Atlantic & Eaton No. 6-C McCampbell and is coring at 7,125 feet.

Al Buchanan of San Antonio is operating most of his rigs in the Lower Gulf Coast sector. In the Flour Bluff field, where two of his rigs are currently drilling, the No. 7 Webb was completed for Humble Oil & Refining Co. and others, and two other tests are now drilling.

To the north in the newly discovered Luby field, another rig is employed on the Stanolind Oil & Gas Co. No. 1 McCann, drilling below 3,700 feet. The Plymouth field of San Patricio County, north of Corpus Christi, keeps two Buchanan rigs constantly active. They are now drilling the Plymouth Oil Co. Nos. 80 and 81 Welder. A wildcat in the same county is also being drilled by Buchanan for Plymouth.

The Humble Oil & Refining Co. No. 10 Kleberg is drilling below 2,900 feet in the Kingsville field, and a

(Continued on Page 131)



Crew for the C. J. J. Drilling Co. on the Memphis Natural Gas Co. No. 4 Young, Branyon field, Caldwell County, Texas: J. B. Dill, Fred Briscoe, San Antonio Machine Supply Co.; J. E. Conley, A. Moore, R. C. Fisher, driller, and John Dyson. This is one of the heaviest rigs drilling in the field

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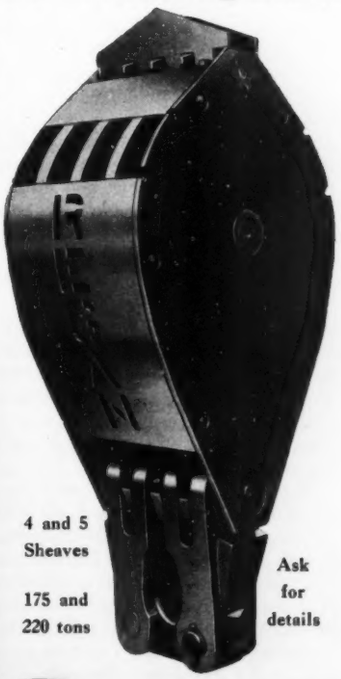

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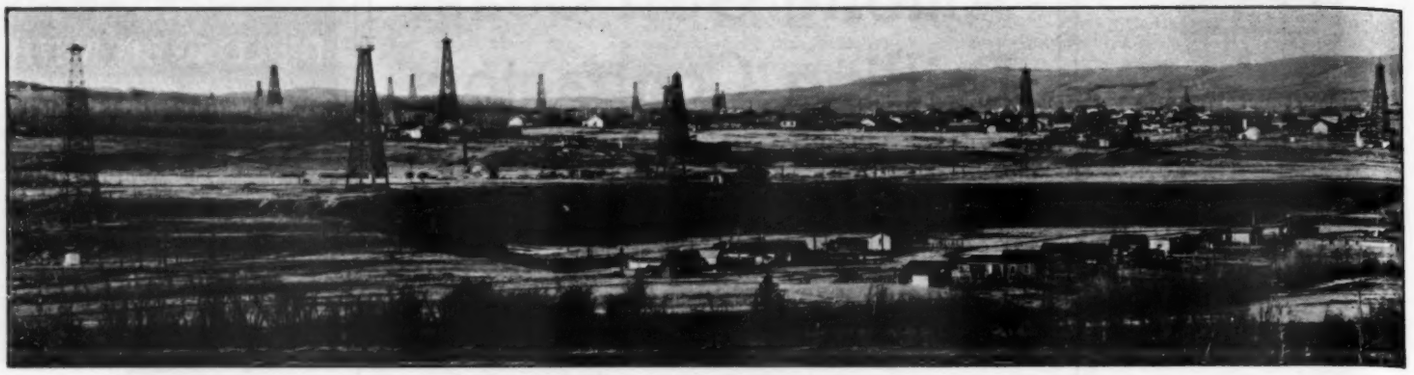


Looking toward the town of Turner Valley in the north portion of the field

Turner Valley Leases May Be Unitized Under New Rules

By L. G. E. BIGNELL

With the completion of Turner Valley Royalties No. 1 well in section 28-18-2 last summer the whole trend of development in the Alberta syncline in Canada was changed. While the Turner Valley field was opened by the drilling of a gas well near seepages on Sheep Creek in January, 1913, followed by deeper drilling and completion of a large naphtha gas well in October, 1924, it was not until 1930 that production men and geologists began to recognize the possibilities of finding crude oil downdip on this structure. The Model No. 1 well was drilled as a naphtha-gas well in the north end of the valley and slightly off the crest of the structure on the west flank. This well gradually changed from high gas-oil ratio to a producer of about 150 bbls. daily of 46 A.P.I. gravity oil with 500,000 feet of gas.

West Flank Development

This indicated the possibilities of finding crude oil in place downdip on this structure of Paleozoic limestone and led to the drilling of Turner Valley Royalties No. 1 located about 12 miles south of Model No. 1. This well was completed in June, 1936, at a total depth of 6,828 feet and produced about 850 bbls. of 44 A.P.I. gravity oil and 2,000,000 feet of gas per day.

Since last summer six wells have been completed on the west flank of Turner Valley field and Dr. G. S. Hume of the Geological Survey of Canada estimates there is a reserve of 250,000,000 bbls. of oil developed. This estimate is based upon an assumed width of from one-quarter to one-half mile and 15 miles length for the pay zone with a porosity of from 10 to 20 per cent. The thickness of the limestone will vary from 50 to 100 feet and on this basis of estimate the average oil content is 100,000 bbls. per acre. Fifty per cent is allowed for shrinkage due to loss of gas when the oil is brought to the surface, or 50,000 bbls. per acre is the recoverable oil.

In addition to developing this substantial reserve the discovery of oil in the west flank of the Turner Valley structure has indicated the possibilities of finding production in several other structures of similar character in the Alberta syncline.

Dr. Theodore A. Link describes this major structural feature in the May, 1931, A.A.P.G. bulletin and gives the following brief review of the development:

"1. Pre-Cambrian sediments deposited in a relatively narrow, deep asymmetrical geosyncline connected with the Pacific Ocean. The deeper part of this basin lay west of the present Rocky Mountains.

"2. Paleozoic sediments deposited on top of the Pre-Cambrian strata without interruption by diastrophic movements of the first order. The deeper part of this broader geosyncline lay somewhat east of the Pre-Cambrian site of greatest deposition as indicated by an unconformable contact of Devonian on Pre-Cambrian in the Purcell Range. This Paleozoic geosyncline was much wider and extended considerably farther eastward than the previous one.

"3. Broad, differential upwarp at the close of Paleozoic time. Possibly only a slight interruption of deposition in the deepest part of the geosyncline, as evidenced by the absence of an angular unconformity between the Triassic and the Paleozoics in the Banff area. The eastern or shallower part of the Paleozoic geosyncline suffered greater erosion (without intense folding or faulting), as indicated by the truncation of older beds eastward from the mountains toward the Pre-Cambrian Shield.

"4. Triassic and Jurassic seas encroached from the Pacific Southwest, with sites of greatest accumulation at, or only slightly eastward, from the previous greatest depth of Paleozoic deposition. Vulcanism and slight diastrophic movements during this period.

"5. Lower and Upper Cretaceous sediments deposited in a broad, widespread geosyncline whose deepest part lay close to the site of the present Rocky Mountains. This encroachment of the sea came from the Gulf of Mexico and the Arctic. Volcanic extrusion of local significance as evidenced by the Crowsnest volcanics above the Blairmore beds.

"6. Diastrophic movements of the first order involving sediments of Pre-Cambrian, Paleozoic, and Mesozoic strata, resulting in the building of Rocky Mountains and foothills. Erosion contemporaneous with, and subsequent to, Tertiary continental sedimentation in the shallow Alberta syncline lying east of the Foothills Belt. Local freshwater and inland-lake deposits within the mountains.

"7. General uplift of land, additional folding and faulting, raising practically all of the Tertiary beds above present sea level."

Madison Lime Pay

The first wells were completed in a dolomitized zone in the Paleozoic limestone but a small volume of high-gravity crude oil has been produced from Mesozoic sandstones at shallower depths. The so-called "naphtha" wells encountered the top of the pay zone at about 4,798 feet and the average depth of holes was 5,272 feet.

In the west flank area the wells entered the lime at about 6,200 feet and several have penetrated the producing formation several hundred feet. As these formations dip at high angles this may account for some of these great thicknesses.

This pay section is classified as Madison lime but it might properly be called Rundle limestone as it outcrops on Mount Rundle near Banff, Canada.

Following the completion of Turner Valley Royalties No. 1 in June, 1936, two additional small producers were completed last year. During 1937 three other wells were completed along the west flank making a total of six oil wells completed along the west flank of the Turner Valley structure. As of July 31 there were 37 active locations along the west side of the field of which 21 were drilling with rotary outfits and 16 were using standard tools. During the week ending July 31, Monarch Royalties No. 1 was completed at a total depth of 7,007 feet and came in as a 1,000-bbl.-per-day pro-

(Continued on Page 106)

North Louisiana, Arkansas

LISBON FIELD IS EXTENDED; FIVE ARKANSAS WELLS DUE

By MITCHELL TUCKER

SHREVEPORT, La., Aug. 16.—Important extensions to the Lisbon field of Claiborne Parish, Louisiana, were made in the past week, while attention is centered upon the 3-mile westward well which is acidizing, preparatory to final testing. Work has begun on two deep tests of the Schuler field of Union County, Arkansas, both of which will have the "big lime" (Permian) as their objective, about 2,000 feet below present producing level.

RODESSA—ARKANSAS

Five wells reached the pay sand in the Miller County, Arkansas, extension of the Rodessa field and all indicated themselves as good producers.

F. W. Burford No. 2 Easton, SE NE SE section 11-20-28, about one-half mile east of the discovery well, flowed 754 bbls. in 24 hours on initial test through 54/64-inch tubing choke, casing pressure 650 pounds. Saturated Mitchell sand was logged from 6,082 to 6,093 feet and saturated Lower Gloyd sand from 6,107 to 6,113 feet, total depth.

F. W. Burford No. 1 A. A. Capps, W half of fractional section 14-20-28, about one-half mile south of the discovery well, topped the Gloyd, and logged porosity, from 5,999 to 6,013 feet and 6,044 to 6,055 feet. After setting the 7-inch casing at 5,975 feet the well tested 6,000,000 feet of gas and 122 bbls. of distillate through seven-sixteenths inch tubing choke, total depth 6,096 feet. The oil saturation was drilled here but in as much as casing was set high enough to expose the high pressure Gloyd gas horizon, only the gas and distillate was produced on initial test. This hole may be reconditioned to separate the gas and oil horizons.

F. W. Burford No. 1-B Gerald, NE section 15-20-28, about 1 mile southwest of the discovery well, logged good saturation in the Gloyd and Mitchell horizons, and has set 7-inch casing at 5,973 feet preparatory to testing, total depth 6,050 feet.

William Monroe Layton and others No. 1 Terry, W half of fractional section 14-20-28, was being tested as the week closed, flowing at the rate of 40 bbls. per hour through three-fourths inch tubing choke, 500 pounds tubing pressure.

Approximately 2 miles northeast of nearest production on the Louisiana side of the field north of Ida, La., and about 6 miles due east of present Arkansas Rodessa production, F. W. Burford is preparing to drill a test well to the Lower Glen Rose in his Kelly Lake tract in section 11-20-27, Miller County. Such a test will be predicted upon the theory that another nose is extending northward from the Rodessa fault feature north of Ida.

RODESSA—LOUISIANA

Hopes for deeper production at Rodessa dwindled last week as R. W. Norton No. 1 Payne, SE SE section 27-23-16, plugged back from 11,486 feet, tested all intermediate zones, and finally set plug to test the Lower Marine section from 8,620 to 8,658 feet, which yielded salt water only. The well will be completed in the Hill zone of the Lower Glen Rose, the gas producing level in Rodessa.

RODESSA—TEXAS

Three completions were made in the Cass County, Texas, portion of Rodessa, and one in the Lodi extension into Marion County.

Magnolia Petroleum Co. No. 18 L. Haywood, NE P. Evans Survey, flowed by heads at the rate of 25 bbls. daily, total depth 6,031 feet.

R. W. Norton No. 2 W. and E. Starke, D. Gilliam Survey, flowed 206 bbls. daily through quarter-inch tubing choke, total depth 6,009 feet.

United Production Co. No. 3 Belote, R. Trammel Survey, flowed 6 bbls. hourly through half-inch tubing choke, total depth 6,025 feet.

In the Lodi area of Marion County, United Production Co. No. 1 Hutchinson, A.D.S. Coy Survey, was completed flowing at the rate of 552 bbls. in 24 hours through quarter-inch tubing choke, tubing pressure 875 pounds, casing pressure 1,125 pounds, gas-oil ratio 1,778 to 1, total depth 6,090 feet.

LOUISIANA

Bienville Parish

H. L. Hunt and others, with the Seaboard Oil Corp. of Texas, have begun drilling on their second well at Bear Creek, situated one-quarter of a mile northwest of the No. 1 McGee, discovery well in section 3-16-6, which is one of the largest wet gas producers in the area. The present well, No. 1 Commercial Real Estate Corp. is considered to be on the extreme northwestern flank of the structure, and offers possibilities of oil production down-flank.

DeSoto Oil & Gas Co. is in the process of completing the second gas-distillate producer in its extensive Lake Bistineau block, No. 1 Ashley, SW SE section 15-16-10w. At a total depth of 5,525 feet, casing is being perforated in the basal Glen Rose.

Lide, Greer, Brown & Marr No. 2 Davis Brothers, NW NE section 12-16-5, Union Church area, found both the Pettit lime from 6,950 to 6,981 feet and the Upper Travis Peak 7,188 to 7,197 feet to be dry on drill stem test, and drilling will be continued throughout the upper red beds of the Travis Peak. Although this well is an offset to No. 1 Davis, a 75,000,000-foot wet gasser at 5,895 feet, it has showed salt water on all producing tests made thus far.

Bossier Parish

Yandell Rogers No. 1 Bidenhern, NW NW NE section 23-21-14, a proposed deep test on the eastern flank of the Pine Island field, has been abandoned at 98 feet after setting surface casing.

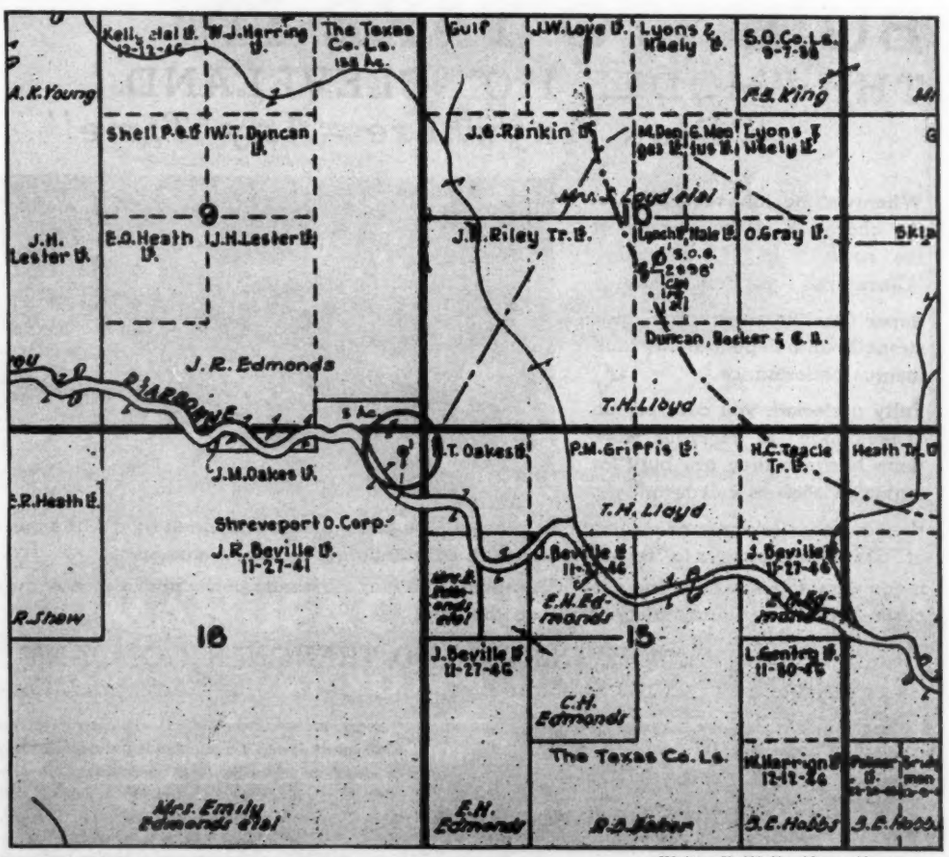
Caddo Parish

In the Blanchard area west of Shreveport, United Gas Public Service Co. No. 1-A Wheeler, section 16-18-16, deep test of this shallow producing structure, has been plugged back from its former total depth of 5,910 feet in the Travis Peak, and casing perforated from 5,628 to 5,654 feet in the Pettit lime, where it was completed flowing 5,000,000 feet of gas and 50 bbls. of distillate daily, casing pressure 500 pounds.

Marine Exploration Co. No. 1 Herold, NW section 10-21-16, has been abandoned as dry, total depth 1.032 feet.

Surf Oil Co. No. 1 Hyman, SE section 10-20-15, at a total depth of 2,210 feet, swabbed water only, and has been abandoned.

Two completions were made last week in Pine Island, Louisiana Oil Production Co. No. 9-B Muslow,



Walter E. Wylie, Maps, Shreveport

Shreveport Oil Corp. No. 1 Edmonds, section 16-20-5, Claiborne Parish, Louisiana, now testing a saturated zone in the Pettit lime about 3 miles southwest of the Lisbon field, and giving promise of being a field extensioner

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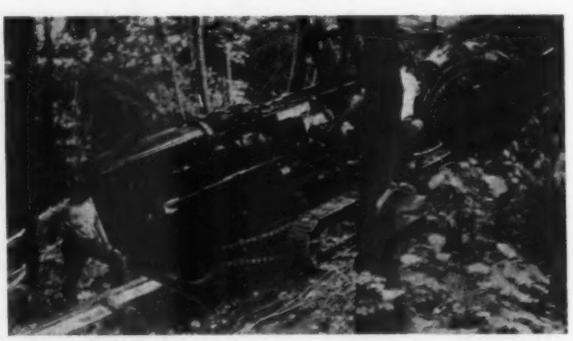

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CLEVELANDS

section 4-20-15, flowed 55 bbls. daily by heads, total depth 1,600 feet. Magnolia Petroleum Co. No. 24 S. J. Robertshaw, NW NE section 23-21-15, pumped 42 bbls. in 14 hours, total depth 1,690 feet.

Daily Gross Production

Estimated daily gross production all companies week ending August 13, 1937:

NORTH LOUISIANA

	Bbls.
Bellevue	735
Caddo light	3,870
Caddo heavy	2,645
Converse	710
Cotton Valley heavy	135
Cotton Valley light	*3,350
De Soto and Red River	1,530
Elm Grove	380
Haynesville	3,025
Holly	120
Homer	2,455
Lisbon	12,915
Pleasant Hill	120
Rodessa	49,815
Sarepta-Carterville	310
Sligo	365
Sugar Creek	450
Urania	2,850
Zwolle	755
Total	86,535

SOUTH ARKANSAS

Champagnolle	1,370
El Dorado	1,965
Lisbon	285
Miller County	495
Nevada	755
Schuler	4,970
Smackover light	2,150
Smackover heavy	17,160
Stephens	590
Troy	575
Urbana	1,215
Total	31,530

Texas side of Rodessa field 38,415 bbls. daily.
Arkansas side of Rodessa field 675 bbls. daily.

*2,900 bbls. is distillate.

Claiborne Parish—Lisbon

Shreveport Oil Corp. No. 1 Edmonds, section 16-20-5, about 3 miles southwest of production in the Lisbon field, and midway between the Lisbon and Sugar Creek fields, has been the center of attention while testing over the last week. The porous Pettit lime was drilled from 5,400 to 5,411 feet, and reportedly carried good saturation. After setting casing on top of the formation, the well was treated with 1,100 gallons of acid, following which it flowed for 45 minutes at a fairly steady rate, making larger heads occasionally. Only a 150-bbl. oil load followed the acid, and apparently the well made some oil from the formation. Preparations are now being made to treat the formation with a 5,000-gallon slug.

A one-half mile northward extension to the Lisbon field was assured with T. L. James No. 1 Baker, section 25-21-5, coming in as a good producer. After a 4,000-gallon acid charge, the well kicked off and flowed at the rate of 36 bbls. hourly. Four and one-half feet of saturation was logged in this well when originally drilled, and it was given up as a failure. Operators recently reentered the hole, set casing, acidized, and completed this producer.

Atlantic Refining Co. No. 2 Tatum, S half NE SE section 31-21-4, flowed 28 bbls. hourly, total depth 5,277 feet. Magnolia Petroleum Co. No. 4 English, N half SW NE section 31-21-4, flowed 35 bbls. hourly, total depth 5,290 feet. No. 4 English, N half NE NW section 31-21-4, flowed 40 bbls. hourly, total depth 5,245 feet.

In the Lincoln Parish portion of the Lisbon field two completions were made. Crown Central Petroleum Co. No. 1 T. F. Patton, N half SE NW section 6-20-4, flowed 36 bbls. hourly, total depth 5,316 feet. Red 'ron Drilling Co. No. 1 Aycock, NW section 6-20-4, flowed 50 bbls. hourly, total depth 5,382 feet.

Sabine Parish

Kirk-Green-Way, Inc., No. 1 Whitney Corp., NW NE section 8-9-13, deep exploratory test of the shallow Converse field, after drilling to a total depth of 8,510 feet in the Lower Marine, has plugged back to 5,370 feet and is preparing to test the porous zone in the Lower Glen Rose formation.

De Soto Parish

Paul Miller No. 1 R. A. Barron, section 36-11-11, a southeast offset to the discovery well in the Grogan field from the Paluxy sand, drilled plug and tested salt water only in this horizon, total depth 2,945 feet. Operations have been suspended.

Pullman Oil Co. No. 3 Ramsey, SE NE NW section 36-11-11, north offset to their discovery well, is testing at its total depth of 2,942 feet. Gas and salt water

showings have been evidenced, but the oil saturation apparently is absent here.

About 3 miles southwest of the Grogan area, J. F. McMannan No. 1 Cook Land Co. logged 3 feet of oil sand from 3,130-33 feet, confirmed by Schlumberger, and tested 1 fourble of oil and 6 salt water on drill stem test. Drilling continues below 3,171 feet.

Webster Parish

Magnolia Petroleum Co. No. 6 Ira Cox, NE NE SE section 23-21-10, was completed as the twelfth producer from the Bodcaw gas and distillate horizon, flowing 514 bbls. of distillate in 18 hours through half-inch tubing choke, with about 10,000,000 feet of gas, tubing pressure 2,475 pounds, casing pressure 2,675 pounds, total depth 8,125 feet.

ARKANSAS

Two new locations were staked along the extreme eastern border of the Arkansas line to continue the wildcatting campaign in that area. Manning & Martin No. 1 Park-Greseck, NW NE NE section 4-6n-5e, Cross County, about 20 miles west of Memphis, Tenn., is preparing to drill. Sloan Wells and others No. 1 R. L. Hardy, SE SE NW section 3-14-7w, Drew County, is rigging up for a test in the "trend" from Smackover eastward into Bolivar County, Mississippi.

Crittendon County

A few miles west of Memphis, Stanley Oil Corp. No. 1 Danner, section 18-8n-9e, has reported a showing of oil in an undetermined formation from 1,316 to 1,327 feet, total depth 1,327 feet. Operations have been suspended pending decision as to future plans.

Monroe County

Also in the eastern area of Arkansas, J. H. Coker No. 1 McClain, NE NW section 15-4n-2w, found the Nacatoch sand from 1,527 to 1,548 feet dry, and has been abandoned at 2,527 feet.

St. Francis County

Manning & Martin, Inc., No. 1 R. C. Gregg, NW of section 20-5n-5e, near Forrest City, has been shut down for orders at 3,540 feet. Porous sand was reported from 3,472 to 3,499 feet but salt water was present. These operators are preparing for the drilling of a test nearby in Cross County, presumably higher on structure.

Union County—Schuler

Making the ninth producer at Schuler, Lion Oil Refining Co. No. 3-A Edna Morgan, SE of Lot 1, section 18-18-17, an offset to the discovery well, flowed at the rate of 60 bbls. hourly through perforated casing at about 5,790 feet. Daily average production from all wells at Schuler was about 5,000 bbls.

Definite arrangements have now been made to deepen two Schuler wells to the "big lime" (Permian), which is expected at about 7,500 feet. All seismograph work which indicated the Schuler structure was done upon this lime, and in as much as structure is definitely proven by the lenticular sands in the Lower Marine, it is hoped that a more consistent field will be opened in the big lime. This was the objective of Lion Oil Refining Co.'s discovery well in the Lower Marine at Schuler, section 18-18-17, which will be one of the wells deepened to this lower level.

E. M. Jones and others No. 1 Marine Oil Co. fee, NW SW SE section 17-18-17, situated about 1 mile east of the discovery well, will be the other deep test, now drilling below 6,000 feet.

All other Schuler wells which do not pick up the saturated lenticular sands in the Lower Marine will be temporarily abandoned pending outcome of the deep exploration.

EAST TEXAS (Border Counties)

Panola County

Magnolia Petroleum Co.'s deep exploratory test of their gas-distillate producing structure in the T. Applewhite Survey, is drilling below 7,500 feet now, having the Lower Marine Trinity as its objective.

Shelby County

Showing favorably on Schlumberger test, Portex Oil & Gas Co. No. 3 Pickering, A. Hansen Survey, set casing at 5,065 feet and is preparing to test a gas-distillate showing in the coquina lime from 5,070 to 5,090 feet, total depth. Location is 700 feet south of their No. 2 gas-distillate producer at 5,057 feet in the Lower Glen Rose.

Sisler & Riley No. 1 Rushing, M. Smith Survey,

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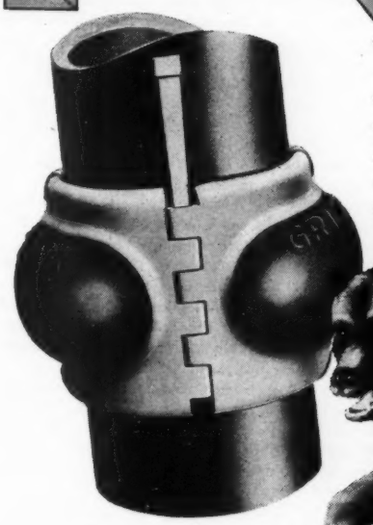

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Oil Man's Calendar

August

18-21—State College, Pa., American Society of Mechanical Engineers, Tenth National Oil and Gas Power meeting, Pennsylvania State College.

September

6-10—Rochester, N. Y., American Chemical Society.

7-8—Louisville, Ky., Kentucky Petroleum Marketers Association, Annual Fall Conference.

13-16—San Francisco, Calif., North American Gasoline Tax Conference.

15-17—Atlantic City, National Petroleum Association, annual meeting, Hotel Traymore.

16-19—Taft, Calif., Pacific Oil Show and Black Gold Festival.

24-25—Traverse City, Mich., Michigan Petroleum Association.

29-30—Cleveland, Ohio, Ohio Petroleum Marketers Association, Fall Conference, Hotel Carter.

September—October

27-Oct. 1—Rochester, National Association of Petroleum Retailers, fifth national convention.

27-Oct. 1—Cleveland, Ohio, American Gas Association, nineteenth annual convention.

30-Oct. 1.—Tulsa, S.A.E. Fuels and Lubricants Regional Meeting.

October

7-8—Oklahoma City, fall meeting of Petroleum Division of A.I.M.E., Hotel Biltmore.

7-9—Los Angeles, Calif., S.A.E. National Aircraft Production Meeting, Ambassador Hotel.

11-15—Kansas City, Mo. — Twenty-sixth National Safety Congress and Exposition.

11-16—Houston, Tex., Oil-World Exposition.

12-14—Chicago, Ill., National Oil Marketers Association Convention, Stevens Hotel.

14-16—Pittsburgh, Pa., mid-year meeting, American Association of Petroleum Geologists, William Penn Hotel.

14-16—Houston, Tex., Independent Petroleum Association of America, annual meeting.

18-22—Atlantic City, N. J., American Welding Society, Eighteenth Annual Meeting and Welding Exposition.

27-28—Indianapolis, Ind., Indiana Independent Petroleum Association, Annual Fall Convention, Hotel Severin.

28—New York, S.A.E. Annual Dinner, Commodore Hotel.

29-30—Dallas, Tex., Mid-Continent Oil and Gas Association of Texas, annual meeting.

November

8-12—Chicago, American Petroleum Institute, Eighteenth Annual Meeting, Stevens Hotel.

1938—March

16-18—New Orleans, twenty-third annual meeting, American Association of Petroleum Geologists, Roosevelt Hotel.

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has been shut down indefinitely, total depth 3,020 feet.

FLORIDA

Suwannee County

In the famous Suwannee County of northern Florida, William G. Blanchard and associates are moving in equipment and preparing to spud in No. 1 Lucy Cotton in SE NE section 35-3s-11e on August 23. Location was staked after a thorough geophysical study, and is on the northwestern flank of the Ocala uplift, and 16 miles southwest of Live Oak, on the inside of the great bend in the Suwannee River. Arrangements are being made to go to a depth of 8,000 feet.

East Texas Fields

(Continued from Page 94)

275 bbls. per day pumping. Humble No. 2 L. Wimms, top sand 4,210 feet, total depth 4,321 feet, 75 bbls. in eight hours swabbing.

Hopkins County

Goldston and others No. 16 Smith, top sand 4,482 feet, total depth 4,520 feet, flowed 235 bbls. per day.

Lamar County

R. H. Dearing No. 1 Federal Land Bank, top Paluxy 1,511 feet, total depth 2,685 feet, dry and abandoned.

Titus County

Cable Tool Drilling Co. No. 1 W. T. Edwards, top sand 4,273 feet, total depth 4,310 feet, pumping 201 bbls. per day. G. M. & W. Production Co. No. 2-A Edwards, top sand 4,270 feet, total depth 4,310 feet, pumping 188 bbls. per day. Hinton and others No. 12 Wilson, top sand 4,190 feet, total depth 4,280 feet, pumping 508 bbls. per day. Housh-Thompson No. 3 Moore Grocery Co., top sand 4,190 feet, total depth 4,300 feet, pumping 502 bbls. per day. Humble Oil & Refining Co. No. 45 King, top sand 4,140 feet, total depth 4,323 feet, pumping 237 bbls. per day. Magnolia Petroleum Co. No. 10 W. H. Crawford, top sand 4,155 feet, total depth 4,310 feet, pumping 192 bbls. per day, 40 per cent salt water. O'Neal and others No. 1-B R. S. Helton, top sand 4,273 feet, total depth 4,335 feet, pumping 300 bbls. per day.

California Fields

(Continued from Page 100)

congested area and farther out in the oil sand underlying the ocean. In the older section of the Huntington Beach field, Standard Oil Co. has recompleted No. 4 Jones pumping 294 bbls. after redrilling and cleaning out the hole to bottom, 4,450 feet. No. 2 Winters McCracken of the Petroleum Co. proved to be a small well from 2,265 feet after the hole had been plugged back from 3,450 feet as it started off pumping 25 bbls. of 15.4-gravity oil daily. In the Richfield district, Bachmann Petroleum Co. has recompleted No. 1 Kelly, pumping 51 bbls. of 23.4-gravity oil per day from 4,625 feet.

Wildcat Operations

In the Cantua district of Fresno County it begins to look as though the Western Gulf Oil Co. has drilled another dud, as No. 1 Skelly Estate in section 32-16-15 was bailed dry at 6,528 feet and operations have been suspended. This is the fourth dry hole drilled by this company in the Cantua district and the intentions of the company with respect to further wildcat operations in the district have not been announced. Due to the encouraging showings found in Nos. 1 and 3 on property leased from the Southern Pacific it is possible that another test will be drilled north of No. 1 S. P. and southwest of No. 1 Skelly Estate. Superior Oil Co. has staked location for a wildcat to be drilled about 12 miles west of Western Gulf Oil Co. No. 1 Skelly, but it will be a fortnight before rig construction gets under way, as the company has found it necessary to build about 7 miles of new road. Up in Sutter County well No. 4 of the Buttes Oilfields, Ltd., in section 2-15-1 is being cleaned out following a gas blowout last week from 5,830 feet. This well blew at an estimated rate of 15,000,000 feet of natural gas daily.

In Humboldt County, the Texas Co. No. 2 Eureka, bottomed at 7,708 feet but plugged back to 6,473 feet because of mechanical trouble, was given a formation test and showed mud and gas. With the packer set at 4,244 feet and the hole open down to 5,830 feet, the well flowed approximately 8,000,000 feet of natural gas. Standard Oil Co. No. 1 Morris, a wildcat in the Trico area of Tulare County, has caused interest due to the landing of 13⅜-inch casing at 5,680 feet, as prospectors are of the opinion that the company has cored some good-looking oil sand. Standard officials deny that any oil sand has been found and stated that the string of casing was landed to protect the hole from possible caving. The company did not make a production test after landing the 13⅜-inch casing, thus confirming the statement that no showings had yet been found. The bit is at present rotating ahead at 5,960 feet.

Turner Valley Leases

(Continued from Page 102)

ducer after acidizing the 469 feet of Madison limestone at the bottom of the hole. Another well entering the critical stage is Royalite Oil Co. No. 5 Sterling Pacific which is below 6,857 feet after penetrating more than 247 feet in the limestone. This will probably be the next west flank producer. Monarch Royalties No. 1 extended the field about a quarter of a mile west and strengthens the probabilities of a number of tests now drilling being completed as producers. This well is the first in the field to be acidized immediately upon completion.

The use of hydrochloric acid is playing a very important part in the Turner Valley field and it is estimated that the output from all wells so treated will show an increase capacity of 5,000 bbls. daily or the field output may be rated as increased 150,000 bbls. per month. This increase has been established at the expenditure of more than $40,000 for acid and treatment charges but the returns to date in crude oil worth $1.70 per barrel have justified the expenditure. It is estimated Turner Valley has produced a total of $41,886,363 in naphtha and crude oil and gas since it was opened in 1914.

It is not anticipated any appreciable overproduction will result from this discovery in Turner Valley because amendments to the regulations under which leases on provincial lands are held, have liberalized the leases so that unitization of areas is possible. An important change was in the regulation setting up the expenditure allowable in lieu of rentals. Another clause provided for unitization of royalties over an area unitized in other respects by the owners and lessees.

The advantages of unitization are many, the main one being orderly drilling according to data at hand and the field development carried out with a view of recovery of the greatest volume of oil or gas at the lowest cost with regard to the available market.

This new era of development in Alberta will make available crude oil in sufficient volume to satisfy the needs of the local refineries, amounting to about 5,000 bbls. per day but the principal market for this oil will be in areas more densely populated located to the east or west of Alberta and the next problem confronting the producer will be developing outlets for the excess oil.

Application of unitization will tend to curb production to the present market demand and for the time being extra oil will be moved by tankcars but already there is talk of pipe line to the Pacific Coast. The demand for crude oil for that area is based upon the fuel oil content and the oil from Turner Valley field is therefore not well suited because of its high gasoline and low fuel oil content.

Central West Fields

(Continued from Page 90)

gas in the Jones sand at 1,098-1,127 feet. Cox & Acton No. 3 Allen Johnson had 861,000 feet of gas in Jones sand at 1,114-40 feet. Callas & Bolling No. 4 Mrs. Jessie Simmerman is spudding. W. W. Damron No. 1 G. C. Rowan is drilling at 700 feet.

In McLean and Ohio counties, Hardin pool, W. E. Hupp and others No. 24 Hackett Bros. is shut down at 500 feet, No. 25 is drilling at 916 feet and No. 26 at 586 feet. Petroleum Co. No. 13 Bettie Cullen is drilling at 900 feet and No. 14 at 300 feet.

McLean County, Livermore district, W. Sargent and others No. 4 D. & S. Butterfield was dry through Bethel sand, total depth 1,414 feet. In Island district South Penn Oil Co. No. 1 H. K. and John Kirtley filled up to 200 feet of top after shot. Its No. 1 Mrs. R. A. Brown is rigging up. In Maxwell district Ellis & Huff No. 2 John Ditto is shut down at 1,245 feet. In Cleopatra district Hoosier Drilling Co. No. 2 Nannie Cook is drilling at 200 feet.

In Daviess County, Pellville district, Rex-Pyramid Oil Co. No. 2 Rolla Cooper is drilling at 150 feet. In Cane Run School district Ashby and others No. 6 Burton Heirs made 15 bbls. in Jones sand at 786-807 feet, shot 60 quarts. In Hewletts Store district Gibson & Aukney No. 1 H. Harrison is drilling at 504 feet. In Red Hill district Hoosier Drilling Co. No. 2 W. H. Hart is drilling at 540 feet. H. C. Davis and others No. 6 Herbert Salmon was dry through Barlow sand, total depth 1,038 feet. Globe Oil Co. No. 3 W. R. Russell is drilling at 150 feet.

In Breckenridge County, Vanzant district, Kentucky Natural Gas Co. No. 1 Frank Duncan is rigging up.

In Butler County, Rochester district, A. H. Collins & D. C. Downey No. 3 Zella Woodall made 10 bbls. in Jett sand 704-56 feet, shot 60 quarts. Daugherty and others No. 5 D. Whittaker is drilling at 850 feet. In Huntsville district Harry Watson and others No. 1 Mrs. Opal Harper is shut down at 550 feet.

In Hopkins County, Slaughters district, Imperial Oil & Gas Co. No. 1 Archibald Estate is still fishing. In White Plains district Jess Ashby and others No. 1 Lindsey Smith is shut down at 850 feet.

Texas and Louisiana Gulf

NEW DEEPLY SEATED FIELD IS FOUND IN HORSESHOE BAYOU

By F. L. SINGLETON

HOUSTON, Tex., Aug. 16.—Opening of a new deeply seated field, important extensions, continuation of active drilling programs, as well as an increasing amount of development work generally and a number of intensive lease plays, provided another interesting week for the Gulf Coast.

Completion by Texas Co. of No. 1 Bayou Sale, deep wildcat on the Horseshoe Bayou (Bayou Sale) prospect in southern St. Mary Parish, Louisiana, furnished the new field. The well came in Thursday, August 12, flowing at the rate of 1,152 bbls. of 37.7-gravity pipe line oil per day through a quarter-inch choke, gauging 2,000 pounds on the tubing.

Production is from perforations in the 7⅝-inch casing at 10,863-73 feet, making the well the second deepest producer on the Gulf Coast. Its depth is exceeded only by Humble Oil & Refining Co. No. 1 Ellender, completed last May at Lirette, Terrebonne Parish, producing through perforations in casing at 11,615 feet. Fifty-six perforations were made in the casing, and 10 feet of 5-inch screen was set with back pressure valve and 62 feet of 5-inch liner sealed to the 7⅝-inch casing and to the 2½-inch tubing.

The well originally was drilled to a total depth of 12,261 feet, where drill pipe stuck. While drill pipe was being fished, with top of the fish at 10,665 feet, the well blew out and caught fire, burning down the derrick and rig. The well bridged after an hour, and with a large drilling barge moved on, operations were resumed. The present completion is in sidetracked hole drilled to a total depth of 10,929 feet.

Including this discovery, there now are four fields on the Gulf Coast with commercial production below 10,000 feet. This well is one of two deep tests which Texas Co. has been drilling in St. Mary Parish. The other is No. 1 State-Bateman Lake, on the Wax Lake Prospect, which with total depth at 10,541 feet has 7⅝-inch casing cemented at 10,515 feet. Locations of these wells are less than 15 miles apart.

Friendswood

In the Friendswood area of Harris County, Texas, recently opened for production by Humble Oil & Refining Co. No. 1 Settegast, the outcome of Vic Borsodi No. 1 Taylor, 1¾ miles southeast, is being awaited to throw some light on production trends in that new field. This well has been drilled "tight," and at the close of the week there was no authentic information on its status although the depth was known to be around 6,020 feet. At that time it was standing waiting on orders. The well has been reported having been in oil sand, and within the picture of the field. Also one of the major companies is known to have paid off on an offsetting tract of land on the strength of the test making a well.

The Borsodi test is about a mile east and some north of Glenn McCarthy No. 1 Whitcomb, abandoned in salt water sand at 6,350-59 feet. The discovery well is producing at 5,802-6,009 feet. In the meantime, Humble Oil & Refining Co. has started drilling No. 1 Beamer, 933 feet northeast offset to the discovery, and has location for No. 1 Ernest A. Gray, trustee, 833 feet northwest of the producer.

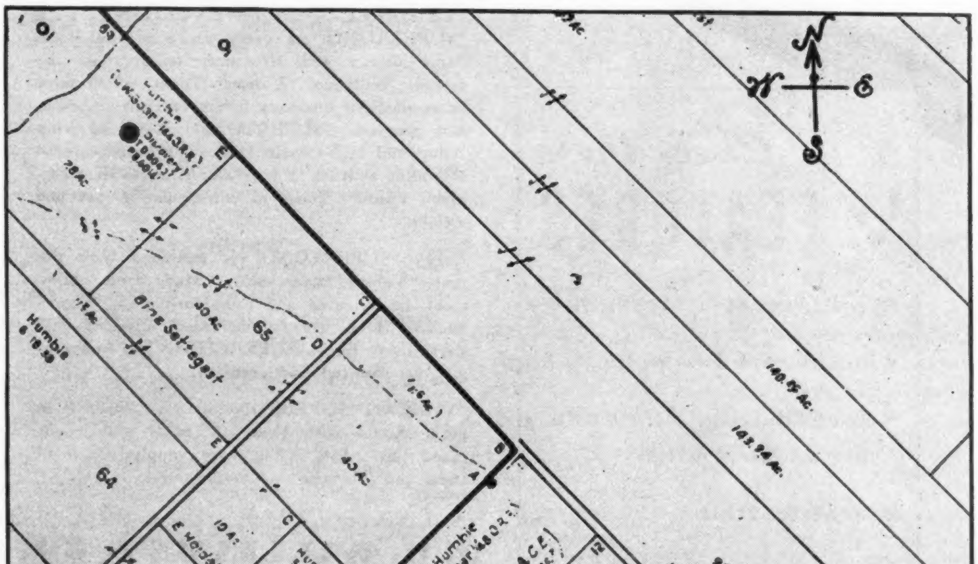
Heyser

The Heyser field, in Calhoun and Victoria counties, Lower Gulf Coast district, also had a major extension with the completion by George Echols of No. 1 Lander, 2,000 feet northwest of production. The well is in sand at a total depth of 5,755 feet where 7-inch casing was cemented. With casing perforated in the sand at 5,744-52 feet, on potential test it flowed at the rate of 336 bbls. daily through 11/64-inch choke with 600 pounds pressure on the tubing and 900 pounds on the casing.

To link this well with the field, Magnolia Petroleum Co. No. 1 Lander is drilling below 5,540 feet. George Echols has skidded the rig of No. 1 Lander to No. 6 Bennett, which is about 750 feet east of production of the main field. This operator has four wells on the Victoria County side of the field. Sinclair Prairie Oil Co. is bringing in its first well in the field, No. 1 Bennett, which is at a total depth of 5,752 feet.

Among the new entries to the Heyser area is Gulf Oil Corp. which is moving in for No. 1 Traylor, in the J. E. Galban Survey, in the north extension district in Victoria County. Humble Oil & Refining Co. and Plymouth Oil Co. completed No. 17-A P. H. Welder in sand at 5,450-87 feet with a potential of 297.54 bbls. daily through a three-sixteenths inch choke, showing 625 pounds pressure on the tubing and 700 pounds pressure on the casing.

Humble No. 2 Marshall, cratered gas well, which blew out from sand at 3,345-3,400 feet, has been killed and abandoned. Water pumped into the sand through perforations at 3,300-15 feet in the casing of No. 1 Marshall, a location distant, did the job. Normandie Oil Co. No. 1 Cook is making gas and distillate with 2,250 pounds pressure on the tubing and 2,210 pounds on



W. W. Zingery, Maps, Houston

Friendswood area, Harris County, showing discovery well, two offsets started, and Glenn McCarthy's dry hole 1¾ miles southeast, and Vic Borsodi's mystery test, 1¾ miles south, which is down to the producing horizon's depth

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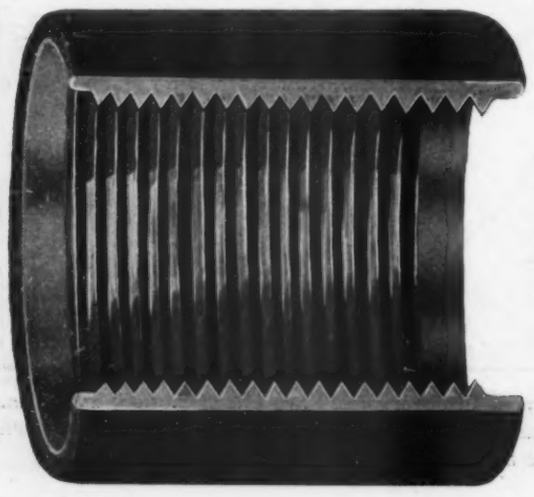

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the casing. The well was completed at a total depth of 5,491 feet, producing through perforations in the casing at 5,482-85 feet. Drilling now is under way in No. 3 Cook.

Hastings

Extension of the Hastings field, Brazoria County, 1,000 feet northwestward by Humble Oil & Refining Co. No. 1 Alexander, completed early the past week with a potential of 646 bbls. daily through a quarter-inch choke from sand at a total depth of 6,000 feet, has been the incentive for an intensive leasing play extending from that well several miles northward as far as Pearland. This well has brought considerable additional acreage into the Hastings picture, which is causing speculation as to how much further the field will extend.

Two additional tests already have been started in the extension area, one by Humble and the other by Jay Simmons. Active operations in the Hastings field, the greatest concentration of development work on the Gulf Coast, have increased to between 25 and 30, and additional rigs are being moved in. Nine completions were reported in the field during the week and at the close of the week there were a half dozen other wells in process of completion.

Palacios

Important developments are due in the new field at Palacios, Matagorda County, where two extension tests are in process of completion. Atlantic Refining Co. and Glenn McCarthy No. 1 Palacios State Bank, a little over a mile west of the discovery oil well, recovered 700 feet of pipe line oil on a drill-stem test with bottom of the hole in sand at 7,935 feet. A pressure of 900 pounds was built up in the nine-minute test through quarter-inch chokes. Seven-inch casing has been cemented at 7,391 feet.

The same operators' No. 2-A Foley, a half-mile east of the discovery oil well, is trying to complete through 20 perforations in the 7-inch casing at 7,850-68 feet. Total depth is 7,892 feet with the casing cemented on bottom. Sun Oil Co. No. 1 Bay Shore Farm, further east, is cleaning with total depth at 8,747 feet. Atlantic and McCarthy No. 1 Rohiff is coring below 8,701 feet after the well tried to blowout.

Magnet

The new Magnet field, Wharton County, got another new well in completion of Atlantic Refining Co. No. 2-B Cockburn, 834 feet east of No. 1-B. It flowed at the rate of 227 bbls. daily through a three-sixteenths inch choke with 1,550 pounds pressure on tubing and 1,950 pounds on casing. Casing was perforated in the sand at 5,537-41 feet with 20 shots. Bottom of hole is 5,550½ feet, plugged back to 5,541½ feet. Two other tests are drilling in the field.

Additional production brought in at the new Lockridge field, Brazoria County, during the week, consisted of two wells, Gulf Oil Corp. No. 5 Wilkes & Smith, and No. 1 Kempner & Stevens. The former tested 34 bbls. in three and one-half hours through a three-sixteenths inch choke at a plugged back depth of 6,374 feet. The other was good for 645 bbls. daily through quarter-inch choke at 6,378 feet.

Republic Production Co. and Houston Oil Co. No. 19 Brooks, north extension test at Silsbee, Hardin County, cored 8 feet of sand showing oil from 6,892 feet to 6,900 feet, and after running casing, is testing. The same operators are drilling below 4,000 feet in No. 20 Brooks fee, east extension test. No. 17 Brooks tested 206 bbls. daily through a quarter-inch choke with casing perforated in sand at 6,804-13 feet. It has 900 pounds pressure on tubing and 1,200 pounds on casing.

Efforts to extend the Anahuac field, Chambers County, 2 miles northwest, met with failure when David B. McDaniel failed to get anything in his No. 1 Barrow, L. Bryan Survey, after drilling to below 7,220 feet. The test, 4 miles northeast of the town of Anahuac, has been abandoned.

Newton Wildcat

Republic Production Co. and Houston Oil Co. No. 1 Sabine Tram Co., a wildcat on a Conroe trend prospect in unproductive Newton County, has been abandoned as dry at 7,152 feet.

Sun Oil Co. got a gas well in its No. 5 Chambers, Turtle Bay, Chambers County. In sand at 6,522-6,600 feet, the well was good for 3,510,000 feet daily through quarter-inch choke with 2,500 pounds pressure on tubing and casing. No. 6 Chambers is being rigged up. At Cotton Lake, same county, Salt Dome Oil Co. has aban-

(Continued on Page 117)

EASTERN COLORADO WILDCAT SHOWS HEAVY GAS PRESSURE

By T. R. INGRAM

DENVER, Colo., Aug. 16.—Interest switched to eastern Colorado again during the week when the Morgan, Flynn & Cobb wildcat in Kiowa County showed heavy gas pressure in a sand in the base of the Permian.

In Wyoming, Ohio Oil Co. has two important new completions in Carbon County, on the Allen Lake and Bunker Hill domes, both showing for gassers. General Petroleum Corp. is preparing to make a deep test of the Coal Creek dome, north of the Big Muddy field. Stanolind Oil & Gas Co.'s Tensleep well in Salt Creek looks good for 1,600 bbls. when conditioned. Mountain Fuel Supply Co. completed a 2,160,000-foot gas well in Sweetwater County at 540 feet in well drilled for water for deep test. Six wells were completed at Hidden dome, Washakie County, of which three were dry.

Texas Co. No. 2 Tweedy, in the Cut Bank field, Montana, flowed 500 bbls. per day for two days through the casing from the Sunburst sand which seldom produces in the field. Cut Bank had two completions and six new operations. Kevin-Sunburst had two completions and three new operations.

Mountain Fuel Supply Co. completed a 14,571,000-foot gas well in Clay Basin field in Utah.

NEW MEXICO

A wildcat 14 miles south of Carlsbad in Eddy County was a prospective producer from the Delaware Mountain formation. It was T. D. Collins No. 1 Weiler permit, C NW NW section 13-20-26, which was estimated good for 25 to 50 bbls. of oil daily as operators prepared to swab through 3-inch tubing. It topped Delaware lime at 1,799 feet, had oil showing at 1,958-63 feet and was bottomed at 1,970 feet. After a shot, it swabbed 50 bbls. of oil through tubing in 24 hours, with gas estimated at 250,000 feet. Another swabbing test was to be made after the well was shut in for 24 hours. The wildcat is approximately 35 miles northwest of the closest Delaware production in the Mason pool, Loving County, Texas.

Continental Oil Co. No. 1 Ailes, C SE SE section 35-20-38, Lea County wildcat, was dry and abandoned at 4,841 feet, total depth.

Culbertson & Irwin No. 1 Boesche, C NE SE section 2-21-32, wildcat, was dry and abandoned at 3,500 feet, total depth, in lime.

Nine other wells in Lea County were completed. Stanolind Oil & Gas Co. No. 5 Gillully A, C NW NE section 25-20-36, topped oil pay at 3,745 feet, total depth 3,866 feet, was acidized and flowed 56 bbls. of oil in one hour through choke. It is in the Eunice area.

Stanolind Oil & Gas Co. No. 1 Hill, section 5-21-36, outpost well in the Eunice area, was bottomed at 3,760 feet, shot at 3,703-11 feet, and swabbed 24 bbls. of oil in three hours.

Continental Oil Co. No. 2 Sanderson B, NE SE NE section 10-20-36, Monument sector, flowed 83 bbls. of oil in 14 hours from oil pay topped at 3,812 feet, total depth 3,928 feet.

Magnolia Petroleum Co. No. 4 Carson, C SE SW section 28-21-37, Hardy pool, was shot and flowed 73 bbls. of oil through choke in 12 hours. Top of pay was 3,665 feet, total depth 3,773 feet.

Landreth Production Co. No. 3 Grizzell, C NW SW section 5-22-37, Penrose area, topped pay at 3,730 feet, was bottomed at 3780 feet in lime, was acidized and flowed 189 bbls. of oil in 12 hours.

Rowan Drilling Co. No. 1 Walden, C NW NW section 15-22-37, found pay at 3,645 feet, total depth 3,740 feet, was acidized and flowed 90 bbls. of oil in 24 hours, with 3,000,000 feet of gas. It is in the Penrose area.

In the South Eunice sector, Continental Oil Co. No. 1 State E, C SW NW section 16-22-36, flowed at the rate of 6 bbls. of oil an hour from pay at 3,730 feet, total depth 3,868 feet.

Western Gas Co. No. 3 Harrison, C NW SW section 20-24-37, Mattix pool, topped pay at 3,652 feet, total depth 3,694 feet, was acidized and flowed 288 bbls. of oil in 24 hours with 2,000,000 feet of gas.

In the Langlie district, Gulf Oil Corp. No. 1 Arnott-Ramsey E, C NW NW section 16-25-37, was bottomed at 3,512 feet, plugged back to 3,498 feet, produced 273,600 feet of gas, completed. Woodley Petroleum Co. No. 1 Cooke, C SW SE section 28-25-37, had pay at 3,185 feet, total depth 3,229 feet, was treated with acid and flowed 30 bbls. of oil an hour, with 1,200,000 feet of gas.

Three Eddy County wells were completed. Flynn, Welch & Yates No. 1 Gissler, C SE SE section 14-17-30, found oil pay at 3,330 feet, total depth 3,462 feet, was acidized and flowed 990 bbls. of oil in 24 hours. Gas gauged 1,500,000 feet.

Neil Wills No. 1 State, C NW NW section 20-20-30, wildcat, opened a new producing area. It found pay at 1,469 feet, was bottomed at 1,477 feet in lime, and flowed 44 bbls. of oil in eight hours.

William Dooley No. 1 Featherston-State, NE NW NW section 24-20-26, wildcat, was dry and abandoned at 344 feet, total depth.

Lea County

Amerada Pet. Corp. No. 6 Byrd, SE sec. 12-20-36. Location.
Amerada Pet. Corp. No. 3 Laughlin, C NW NE sec. 9-20-37. Drlg. 3,910 ft.
Anderson-Prichard Oil Corp. No. 1 Wells, C SE SE sec. 5-25-37. Drlg. 3,575 ft.
Anderson-Prichard Oil Corp. No. 1 Gregory, NW sec. 33-25-37. Rig.
Anderson-Prichard Oil Corp. No. 2 Langlie, SE sec. 8-25-37. Drlg. 3,113 ft.
Anderson-Prichard Oil Corp. No. 1 Lanehart, SW sec. 21-25-37. T.D. 2,828 ft.; fishing.
Atlantic Ref. Co. No. 1-P State, C SE NW sec. 25-20-36. Drlg. 3,800 ft.
J. W. Brown No. 1 State, C SW SW sec. 22-21-24. T.D. 3,510 ft.; S.D. for repairs.
Continental Oil Co. No. 7 Britt, C SW SE sec. 18-20-37. Drlg. 707 ft.
Continental Oil Co. No. 1-A-15 Cline, NW sec. 15-23-37. Wildcat. P.B. from 3,860 ft. to 3,672 ft.; shut down.
Continental Oil Co. No. 2-A-15 Elliott, SE sec. 15-22-37. Drlg. 814 ft.
Continental Oil Co. No. 1 Hawk, SE sec. 5-21-37. Drlg. 1,391 ft.
Continental Oil Co. No. 1 Jack, C NW NE sec. 27-34-37. T.D. 2,509 ft.; P.B. 2,419 ft.
Continental Oil Co. No. 1-A-30 Lockhart, NW sec. 30-21-36. Location.
Continental Oil Co. No. 1-B-30 Lockhart, C SE SW sec. 30-21-36. T.D. 3,965 ft.; 4,000,000 ft. gas; to deepen.
Continental Oil Co. No. 2-B-31 Lockhart, C SE SW sec. 31-21-36. Drlg. 1,710 ft.
Continental Oil Co. No. 2-A-14 Sanderson, NE NW NE sec. 14-20-36. Drlg. 3,200 ft.
Continental Oil Co. No. 1-A-20 State, NE NE SE sec. 20-20-37. T.D. 3,840 ft.; running tubing.
Continental Oil Co. No. 1-E-17 State, C SE SE sec. 17-22-36. T.D. 3,842 ft.; running tubing.
Continental Oil Co. No. 5-A-17 State, C SW NE sec. 17-19-37. Drlg. 2,825 ft.
Continental Oil Co. No. 1 Stevens, C SW NW sec. 34-23-36. T.D. 3,691 ft.; P.B. 3,600 ft.; W.O.C.
Continental Oil Co. No. 1 Wantz, C SW SW sec. 21-21-37. T.D. 3,872 ft.; testing.
Cranfill & Germany No. 1 Weir, C NE NE sec. 15-20-37. T.D. 4,210 ft. S.D.O.
Culbertson & Irwin No. 1 Humphrey, NE NW NE sec 3-25-37. T.D. 3,340 ft.; fishing.
Devonian Oil Co. No. 2 Christmas, SE sec. 28-22-37. Temporarily abandoned.
Devonian Oil Co. No. 3 Christmas, C SW SE sec. 28-22-37. Temporarily abandoned.
Empire Oil &.Ref. Co. and Repollo Oil Co. No. 2 Brunson, NW sec. 3-22-37. Rigging up rotary.
Empire Oil & Ref. Co. No. 5 Clossen A, SE SE NE sec. 6-22-36. Drlg. 2,700 ft.
Empire Oil & Ref. Co. and Atlantic Ref. Co. No. 1 Hodges, NE cor. sec. 8-24-37. T.D. 3,492 ft.; testing.
Empire Oil & Ref. Co. No. 1 Parsons, C SE SE sec. 27-19-36. T.D. 4,002 ft.; testing.
Empire Oil & Ref. Co. No. 1-G State, sec. 2-21-36. T.D 3,900 ft.; shut down.
Empire Oil & Ref. Co. No. 2-G State, C SE SW sec. 2-21-37. Drlg. 3,850 ft.
J. E. Farrell No. 2-B Walden, C NE SW sec. 15-22-37. T.D. 3,553 ft.; S.D. for water.
J. E. Farrell No. 2-C Walden, C SE SW sec. 15-22-37. Drlg. 3,665 ft.
Bert Fields No. 3 Turner State, NW sec. 32-20-37. T.D. 3,843 ft.; testing.
Gulf Oil Corp. No. 2 Baker, SE sec. 5-22-37. Drlg. 2,980 ft.
Gulf Oil Corp. No. 1 Boyd, sec. 23-22-37. T.D. 3,681 ft.; testing.
Gulf Oil Corp. No. 2 Cole, C NE NE sec. 16-22-37. T.D. 1,141 ft.; shut down.
Gulf Oil Corp. No. 3 Cole, C SE NE sec. 16-22-37. Derrick.
Gulf Oil Corp. No. 2 Day, NW sec. 6-22-36. Drlg. 3,760 ft.
Gulf Oil Corp. No. 1 Elliott, SW SE SE sec. 15-25-37. Drlg. 3,380 ft.
Gulf Oil Corp. No. 1-H Graham State, NW sec. 13-20-36. Drlg. 3,754 ft.
Gulf Oil Corp. No. 1-D Janda, C NW SW sec. 2-21-36. T.D. 3,835 ft.; running tubing.
Gulf Oil Corp. No. 1-D Kutter, C SW SW sec. 8-19-37. Drlg. 3,535 ft.
Gulf Oil Corp. No. 1 Mattern G, C NE SE sec. 18-21-37. Derrick.
Gulf Oil Corp. No. 1 Monda, C SE SW sec. 21-22-37. Drlg. 3,607 ft.
Gulf Oil Corp. No. 2 Reeves, C SE NW sec. 29-20-37. T.D. 3,840 ft.; shut in.
Gulf Oil Corp. No. 1 Rinewalt, NW sec. 4-22-37. T.D. 3,752 ft.; trying to kill gas.
Gulf Oil Corp. No. 1 Stebbins, C SE NW sec. 5-22-37. Derrick.
Gulf Oil Corp. No. 1 Sticher, C SE SW sec. 4-22-37. T.D. 2,790 ft.; P.B. 2,545 ft.
Gulf Oil Corp. No. 2 Westfall, SE sec. 15-25-37. T.D. 3,418 ft.; P.B. 3,386 ft.
Gulf Oil Corp. No. 1-B White, SE sec. 35-20-36. Derrick.
Herschback Drlg. Co. No. 1 Crutchfield, SW SE NE sec. 32-19-37. T.D. 1,326 ft.; S.D. for repairs.
Homestead No. 1 Clifford, SW sec. 12-26-32. Wildcat; drlg. 1,140 ft.
Humble O. & R. Co. No. 1 Fopeano, C SE SW sec. 25-20-36. Drlg. 3,185 ft.
Humble O. & R. Co. No. 2 Saunders, C NW NW sec. 9-22-34. T.D. 1,151 ft.; underreaming.
Humble O. & R. Co. No. 2 Williams, C SE NW sec. 34-24-37. Set 9⅝-inch casing at 419 ft.
Jal Nat. Gas Corp. No. 2 Justis, NE sec. 20-25-37. T.D. 3,029 ft.; testing.
Landreth Prod. Co. No. 4 Grizzell, C SW SW sec. 5-22-37. Location.
Mack & Stauffer No. 2 Grizzell, C NE NE sec. 8-22-37. T.D. 1,315 ft.; S.D. for repairs.
Magnolia Pet. Co. No. 4 Cary, C SW SW sec. 21-22-37. Derrick.
Magnolia Pet. Co.No. 1 Hardy, SW SW NW sec. 29-21-37. Drlg. 2,920 ft.
Magnolia Pet. Co. No. 1 State G, NW NW NE sec. 34-17-34. T.D. 4,905 ft.; P.B. 4,794 ft.
Magnolia Pet. Co. No. 2 State-Bridges, sec. 14-17-34. Drlg. 3,405 ft.
Maljamar O. & G. Co. No. 3 Mitchell, C NE NE sec. 20-17-32. T.D. 4,070 ft.; testing.
J. A. Mascho No. 1 Cloyd, C SE SE sec. 20-22-33. Wildcat; derrick.
McDonald & Weiner No. 1 Elliott, SE cor. sec. 19-21-37. T.D. 1,940 ft.; S.D. for repairs.
Mid-Continent Pet. Corp. No. 3 Greer, C SE NW sec. 21-22-36. T.D. 3,830 ft.; testing.
Mid-Continent Pet. Corp. No. 1 Owen, C NW NW sec. 3-22-37. T.D. 3,737 ft.; swabbing.
National Drlg. & Prod. Co. No. 1 Flint, C NE NE sec. 29-20-34. Wildcat; T.D. 1,015 ft.; underreaming.
Ohio Oil Co. No. 1 Kutter D, C SW SW 8,19-37. Drlg. 3,535 ft.
Ohio Oil Co. No. 3 State-Hansen, C W½ NE NE sec. 16-20-37. T.D. 3,887 ft.; P.B. 3,871 ft.; testing.
Ohio Oil Co. No. 7 State-McDonald, C SW SE sec. 16-22-36. T.D. 3,871 ft.; cleaning out.
Ohio Oil Co. No. 8 State-McDonald, C SW SW sec. 16-22-36. Drlg. 2,800 ft.
Ohio Oil Co. No. 3 State-McGrail, NE sec. 27-19-36. T.D. 4,028 ft.; testing.
Ohio Oil Co. No. 2 Turner, SW NW SE sec. 29-21-37. Drlg. 3,585 ft.
Phillips Pet. Co. No. 1 Lea, C NW NW sec. 30-17-34. Wildcat; drlg. 3,920 ft.
Plains Prod. Co. No. 1 Humphreys, NE sec. 3-25-37. Loc.
Plains Prod. Co. No. 2 Moseley, SE sec. 34-22-37. Cellar.
Repollo Oil Co. No. 2 Christmas, sec. 28-22-37. T.D. 4,073 ft.; plugging back.
Repollo Oil Co. No. 3 Jamison, SW NE NE sec. 21-24-37. Drlg. 3,410 ft.
Repollo Oil Co. No. 1 Turner, sec. 29-21-37. T.D. 3,659 ft.; W.O.C.
Repollo Oil Co. No. 1 White, SE sec. 24-20-36. T.D. 3,750 ft; set 7-in. at 3,738 ft.
Rowan Drlg. Co. No. 1-A Elliott, SW sec. 27-22-37. Drlg. 2,850 ft.
Rowan Drlg. Co. No. 1 Elliott B, C NE NW sec. 9-22-37. Drlg. 40 ft.
Rowan Drlg. Co. No. 2 Elliott B, C NW NW sec. 9-22-37. Cellar and pits.
Rowan Drlg. Co. No. 2 Walden, C NE NW sec. 15-22-37. Derrick.
Samedan Oil Co. No. 3 Hughes, sec. 4-23-27. T.D. 3,631 ft.
Schermerhorn Oil Co. No. 2 Woolworth, sec. 29-24-37. Drlg. 2,365 ft.
Skelly Oil Co. No. 1 Baker, C NW NW sec. 26-22-37. Drlg. 3,523 ft.
Skelly Oil Co. No. 5 J. B. Baker, C SE NW sec. 27-22-37. Drlg. 2,921 ft.
Skelly Oil Co. No. 1-B Harrison, C NE NW sec. 9-23-37. T.D. 3,690 ft.; shut down.
Skelly Oil Co. No. 2-B Harrison, C NW NW sec. 9-23-37. Drlg. 3,350 ft.
Skelly Oil Co. No. 1 Grizzell, C SW NE sec. 6-22-37. Drlg. 3,085 ft.
Skelly Oil Co. No. 1 Hill, C Lot 7, sec. 6-21-37. T.D. 3,530 ft.; W.O.S.T.
Skelly Oil Co. No. 3 G. W. Sims, C NW NE sec. 9-23-37. T.D. 3,451 ft.; set 7-in. csg.
Skelly Oil Co. No. 4 G. W. Sims, C NW NW sec. 10-23-37. Drlg. 1,060 ft.
Skelly Oil Co. No. 2 H. O. Sims, sec. 4-23-37. Drlg. 3,626 ft.
Skelly Oil Co. No. 1-C R. R. Sims, sec. 3-23-37. Drlg. 3,622 ft.
Skelly Oil Co. No. 7 Van Etten, sec. 9-20-37. Drlg. 3,723 ft.
Skelly Oil Co. No. 8 Van Etten, sec. 9-20-37. Drlg. 3,798 ft.

Stanolind O. & G. Co. No. 4-A Gilluly, C NW NE sec. 24-20-36. T.D. 3,875 ft.; testing.
Stanolind O. & G. Co. No. 6-A Gilluly, C NE SW sec. 25-20-36. Drlg. 578 ft.
Stanolind O. & G. Co. No. 7 Gilluly A, C SW SE sec. 24-20-36. Moving in rotary.
Stanolind O. & G. Co. No. 8 Gilluly A, C NW SE sec. 24-20-36. Digging cellar.
Stanolind O. & G. Co. No. 2-B Langlie, C NW NW sec. 15-25-37. Drlg. 1,077 ft.
Stanolind O. & G. Co. No. 3-B Langlie, C SW SW sec. 14-25-37. Drlg. 1,195 ft.
Stanolind O. & G. Co. No. 1-B Meyers, C NW NW sec. 7-24-37. Drlg. 2,278 ft.
Stanolind O. & G. Co. No. 3 Meyers, SE sec. 4-24-37. T.D. 3,640 ft.; cleaning out.
Stanolind O. & G. Co. No. 1 State, C SE SE sec. 2-21-36. Derrick.
Stanolind O. & G. Co. No. 2 State, C SW SE sec. 2-21-36. Drlg. 2,530 ft.
W. H. Street No. 2 Wood, C SW NE sec. 22-22-37. Drlg. 3,592 ft.
Texas Co. No. 1-B Keohane, C NW NE sec. 18-19-37. Drlg. 2,730 ft.
Texas Co. No. 11 Lieu Lands, C NW NW sec. 20-20-37. T.D. 3,867 ft.; testing.
Texas Co. No. 12 Lieu Lands, C SW SW sec. 20-20-37. T.D. 3,858 ft.; testing.
Texas Co. No. 13 Lieu Lands, sec. 19-20-37. Drlg. 3,462 ft.
Texas Co. No. 4 Saunders, sec. 18-19-37. Drlg. 3,879 ft.
Texas Co. No. 5-C State, C NE NE sec. 19-20-37. Drlg. 2,520 ft.
Texas Co. No. 2 Weir, C SE SW sec. 23-19-36. Cellar and pits.
Texas Pacific C. & O. Co. No. 4-A State, C SW SW sec. 9-22-36. T.D. 3,878 ft.; P.B. 3,877 ft.; testing.
Texas Pacific C. & O. Co. No. 5-A State, sec. 19-22-36. Drlg. 254 ft.
Tide Water Oil Co. No. 2-K State, C SE SW sec. 13-20-36. Drlg. 3,070 ft.
Western Gas Co. No. 4 Harrison, C NW SW sec. 29-24-37. Coring 3,687 ft.
Williams & Cockburn No. 3 Miller, C SW SW sec. 23-17-32. T.D. 3,873 ft.; shut down.
Woodley Pet. Co. No. 2 Cooke, C SE SE sec. 28-25-37. Loc.

Eddy County

F. E. Baker No. 1 Eddy, NE sec. 12-22-27. T.D. 55 ft.; shut down.
Barnadall Oil Co. No. 5 Dodd, sec. 22-17-29. T.D. 2,757 ft.; P.B. 2,730 ft.; est. 60 bbls. oil.
Fred Brainerd No. 2 Brainerd, sec. 5-18-27. Drlg. 500 ft.
Ed Bryant No. 1 Stebbins, C NE SW sec. 19-20-29. Drlg. 275 ft.; S.D. for csg.
Cities Service Oil Co. No. 1 State, CSL SW SE sec. 16-17-30. Moving in machine.
T. D. Collins No. 1 Weiler, C NW NW sec. 13-24-36. T.D. 1,970 ft.; P.B. 1,965 ft.; C.O.
Continental Oil Co. No. 1 Barret, SE sec. 14-20-30. T.D. 377 ft.; shut down for water.
Continental Oil Co. No. 1 Etz, C NW NE sec. 24-16-30. Drlg. 2,450 ft.
Finley & Cherry No. 1 Buchley, C NW NW sec. 28-16-31. Wildcat; drlg. 270 ft.
Flint Prod. Co. No. 1-B State, SE sec. 20-17-30. Drlg. 3,800 ft.
Franklin Pet. Corp. No. 1 Nelson, NW sec. 4-18-30. Wildcat; T.D. 2,953 ft.; P.B. 2,906 ft.; swabbing.
F. W. & Y. Oil Co. No. 5 Gissler, C NE SE sec. 14-17-30. T.D. 3,450 ft.; P.B. 3,370 ft.; testing.
F. W. & Y. Oil Co. No. 3 Jackson, C NW SE sec. 13-17-30. T.D. 2,953 ft.; fishing.
F. W. & Y. Oil Co. No. 4-A Jackson, NE sec. 13-17-30. T.D. 2,950 ft.; running csg.
F. W. & Y. Oil Co. No. 5-A Jackson, NE sec. 13-17-30. Rig.
F. W. & Y. Oil Co. No. 3-X Jackson, SE sec. 13-17-30. Drlg. 3,010 ft.
F. W. & Y. Oil Co. No. 2-A Stevens, C NW SW sec. 13-17-30. Drlg. 3,110 ft.
F. W. & Y. Oil Co. No. 3-A Stevens, NW sec. 13-17-30. Drlg. 3,136 ft.
F. W. & Y. Oil Co. No. 2-B Stevens, NW sec. 13-17-30. Rig.
R. L. Holcomb No. 1 State, NW sec. 22-17-28. T.D. 115 ft.; shut down.
C. F. Ingram No. 1 Page, NE NE SW sec. 15-21-28. T.D. 455 ft.; shut down.
W. A. Nichols No. 1 Johnson, NE sec. 35-16-21. Wildcat; drlg. 2,795 ft.
Pool Oil & Gas Co. No. 1 Reed, SW sec. 28-24-28. Wildcat; spudded.
Red Lake No. 9 State, sec. 22-17-28. T.D. 1,954 ft.; testing.
Repollo Oil Co. No. 2-D McIntyre, NW NE SW sec. 20-17-30. Drlg. 1,330 ft.
Republic Prod. Co. No. 2-B Robinson, sec. 27-17-29. T.D. 2,805 ft.; cleaning out.
Paul Sargent No. 1 State, NE sec. 16-17-31. Drlg. 3,292 ft.
R. A. Shugart No. 1 Sullivan, C NW SW sec. 35-18-31. T.D. 595 ft.; shut down for repairs.
W. O. Snyder No. 1 Pecos Irrigation, C NE SE sec. 15-25-28. T.D. 575 ft.; shut down.
Superior Oil Co. No. 1 Foster, SE SE NE sec. 17-17-31. Drlg. 2,815 ft.
Tigner, Etz & Keyes No. 2-B Keyes, NW sec. 10-17-28. Drlg. 980 ft.
Weiner & McDowall No. 1 Kerr, C SE NW sec. 3-24-24. Drlg. 1,525 ft.
W. R. Royalty Co. No. 1 State, C SW NE sec. 16-17-31. Drlg. 1,332 ft.
Western Drlg. & Eng. Co. No. 1 Western, NW sec. 26-17-29. Drlg. 2,236 ft.
Western Gas Co. No. 1 Cagle, C NW NW sec. 8-26-30. Drlg. 610 ft.
Neil H. Wills No. 1 Vickers, C NW SE sec. 23-20-26. Wildcat; rigging up machine.

Chaves County

English & Harmon No. 1 Billingslea, SE sec. 9-15-29. Show of oil 3,119-25 ft.; drlg. 3,196 ft.

Curry County

Bond & Harrison No. 1 Hart Ranch, C NW SE sec. 13-2n-31. T.D. 1,246 ft.; S.D.

Dona Ana County

Juels C. Bertrand No. 1 Casad Permit, sec. 24-26-5e. T.D. 47 ft.; S.D.O.

McKinley County

S. Dysart No. 1 Government, NE sec. 14-14-10w. T.D. 1,390 ft.; fishing.

Otero County

George Mulvey No. 1 State, SW cor. sec. 11-25-8. T.D. 263 ft.; shut down.
Fred Turner No. 1 Evans, NW NW SW sec. 22-14-12. O.W.D.D.; wildcat: T.D. 3,763 ft.; S.D.

Roosevelt County

C. S. Peterson and Conquistadores Oil Co. No. 1 Good, NW SE SE sec. 28-5s-30. Rigging up standard tools.

NORTHWEST NEW MEXICO

Bernalillo County

Norins Realty Co., Inc., No. 2 North Albuquerque, NE SE NW sec. 19-11n-4e. Drlg. 3,550 ft.

San Juan County

Continental Oil Co. No. 63 Rattlesnake, C SW NE sec. 2-29n-19w. Drlg. 727 ft.
Jack Amenda No. 4 Hart, NW NE SW sec. 25-30n-12w. Drlg. 1,995 ft.
Red Butte Oil Co. No. 1 Govt., C SW SW sec. 6-21n-13w. R.U.; (first report).
Anna Oil Corp. No. 6 Govt., SW NE NE sec. 33-30n-11w. Drlg. 725 ft.

Socorro County

R. Allen Brown, Tr., No. 1 Belen Ld. Gr., SE NW sec. 16-2n-1e. R.U.R.

Torrance County

Chief O. & G. Co. No. 1 Pace, SE sec. 12-6n-7e. T.D. 850 ft.; installing heavier equip.

Valencia County

C. A. Groeber et al No. 1 Fuqua, NE NE sec. 19-5n-3e. Drlg. below 640 ft. in valley fill.
Big Three Oil Co. No. 1 Dalies Townsite, sec. 5-6n-1e. Rigged and ready to spd.

COLORADO

Adams County

Glenridge Oil Corp. No. 1 Hills, SE cor. sec. 27-3s-64w. S.D. 4,345 ft.

Archuleta County

Cortez Oil Co. No. 1-A Crowley, NW SE NE sec. 2-32n-2e. S.D. 40 ft. (C.D.).
Oil City Pet. Co. and Archuleta O. & G. Co. No. 1 Reader, SW SE SW sec. 24-33n-2e. T.D. 1,005 ft.; C.O. at 965 ft. and carrying 5⅞-in.
Oil City Pet. Co. No. 1-A Garnett, NE NW SW sec. 25-33n-2e. T.D. 1,515 ft.; rng. 6⅝-in. to set at 1,365 ft.; will redrill to bottom and set 5⅞-in.

Bent County

Indian Terr. Ill. Oil Co. and Olson Drlg. Co. No. 1 Arbes, C Lot 2, sec. 2-21s-48w. Drlg. 3,640 ft.; 9⅝-in. cmtd. 3,510 ft. with 600 sacks.

Boulder County

J. B. Furstenberg No. 1 Foote, SE sec. 20-1n-70w. Drlg. 1,640 ft.
Boulder Prod. & Dev. Co. No. 11 Harlow Est., SE NE sec. 36-2n-71w. S.D.O. 765 ft.; dry in Muddy.

Fremont County

Utex Oil Co. No. 26, C SE SW sec. 20-20s-69w. Drlg. 760 ft.; 8¼-in. at 468 ft.

Garfield County

Roaring Fork Oil Co. No. 1 Patterson, C NE sec. 36-7s-88w. Drlg. plg.; 12½-in. cmtd. at 262 ft.

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Kiowa County

Attention was attracted to eastern Colorado when Morgan, Flynn & Cobb No. 1 Hostetter, C NW SE section 6-20s-46w, in the Nee-No-She district, encountered heavy gas pressure at 2,960 feet in a sand in the base of the Permian. No test was made, but the pressure was strong enough to thin the drilling mud. It is estimated the showing amounted to somewhere between 1,000,000 and 5,000,000 feet. This test, which is being drilled with rotary by Helmerich & Payne, is about 1½ miles north of the old Nee-No-She well which was drilled a number of years ago and ran out of hole in the top of the Pennsylvanian at 4,130 feet, where it was abandoned. It had the bottom of the red beds at 3,330 feet and had showings of oil at 3,352 feet in white sandy lime; at 3,520 feet in black shale; at 3,883 feet in sandy shale; and at the bottom. The well now drilling is running regionally high and is at an interesting depth.

Morgan & Flynn et al No. 1 Hostetter, C NW SE sec. 6-20s-46w. Drlg. 3,515 ft.

Larimer County

Great West O. & G. Corp. No. 1 Haworth, C SW SE sec. 16-4n-69w. Drlg. 1,120 ft. in gr. sh.

LaPlata County

N. Spatter No. 1 Bryce, SE SW SW sec. 31-33n-9w. Drlg. 400 ft.

Mesa County

Midwest Drlg. & Dev. Co. No. 1 Callahan, NE NW SE sec. 30-8s-97w. T.D. 1,174 ft.; U.R. 10-in. through wet sd. into dry sd.; G.S. through 350 ft. of W.

Moffat County

Stanolind Oil & Gas Co. has gone back into No. 16-X Parkman on the Iles dome and is drilling deeper. This well was completed in the Sundance at 3,443 in 1935 for 240 bbls. per day.

Mountain Fuel Supply Co. and Kerlyn Oil Co. No. 1 Duncan, C NE SW sec. 1-11n-100w. M.I.M. (cor. name).
Stanolind O. & G. Co. No. 1-X Parkman, SE NW NW sec. 23-4n-92w. Drlg. 3,450 ft.
Morapas Pet. Co. No. 1 Coles, SW SW SE sec. 1-3n-92w. Drlg. 1,475 ft.
Anderson-Kerr Drlg. Co. et al No. 1 Denise, C SE SE sec. 19-9n-99w. S.D. 2,500 ft.; W.O. rotary tools.
Texas Co. No. 4 Iles Inv. Co., Lot 7, sec. 23-9n-92w. T.D. 3,490 ft.; prep. for pmpg. test.

Morgan County

Swisher et al No. 1 Lunt, SE cor. sec. 3-4n-60w. T.D. 1,718 ft.; fshg. two strings tools and bailer.

Park County

South Park Oil Co. No. 1 Lemar, NE NE SE sec. 34-11s-75w. Drlg. 5,187 ft. in bentonite and sh.

Pitkin County

Glenco Dev. Co. No. 1 Christiana, NW cor. sec. 9-10s-89w. Drlg. 266 ft.

Rio Blanco County

Buford Oil Co. No. 1 Govt., C SW SW sec. 16-1n-91w. Road comp.; 12½-in. on ground; M.I.M.
Texas Co. and California Co. No. 1 Unit, SW SE NW sec. 35-3n-94w. Drlg. 2,563 ft. in dk. sh.

WYOMING

Albany County

Murphy Oil Co. No. 1 Holst-Woolf, NW cor. section 19-17-76w, Quealy dome, which has been testing for several weeks, is a completion for a small pumper in the Dakota at 3,582-3,690 feet. It had water in the Sundance at 3,955-70 feet and was plugged back from 4,067 feet. It is an edge well at the north end of the pool.

Murphy Oil Co. No. 8 Holst, C SW SE sec. 13-17-77w. Drlg. 2,572 ft. in sdy. sh. and shells.
Hal Blakeman No. 1 Chappie, C NE NW sec. 33-21n-67w. T.D. 1,681 ft.; prep. to resume.
Murphy Oil Co. No. 4 Wilson, NW NW SW sec. 18-17n-76w. T.D. 3,601 ft.; drlg. out cmt.

Big Horn County

Yale Pet. Corp. No. 1 Stock-Jones, SE cor. sec. 52-56n-97w. T.D. 4,050 ft.; cir. oil to free D.P.
Ohio Oil Co. No. 2 Byron-Baker, SW NW sec. 23-56n-97w. Drlg. 5,190 ft. in r.b.
Ohio Oil Co. No. 1 Pryde, C SW SE sec. 24-56n-97w. T.D. 5,511 ft. in r.b.; cmtg. to restore cir.
Joan Oil Co. No. 1 Howell, sec. 32-55n-97w, (Lot 63). P.B. from 1,240 ft.; redrlg. at 318 ft.
Peay Oil Co. No. 1 Denio, Tr. 43-C, sec. 15-55n-97w. T.D. 3,930 ft.; fshg.
Woods-Callahan Oil Co., Ltd., and Wyoming O. & R. Co. No. 1 Evans, NE NE NW sec. 12-44n-91w. Drlg. 2,210 ft. in r.b.

Campbell County

Powder River O. & G. Co. No. 1 Rhodes, NE SE SW sec. 24-49n-74w. Drlg. 410 ft.; 15½-in. at 374 ft.

Carbon County

Ohio Oil Co. has two near completions on the Allen Lake and Bunker Hill domes of more than ordinary interest. No. 1 Union Pacific-Wister, C NW SW section 17-22n-78w, an east offset to Medicine Bow Oil Co. No. 1 Hintze-Government, looks like the biggest gas well so far completed in the Allen Lake field. It is bottomed at 2,045 feet and gauged 46,000,000 feet in the Sundance at 1,952-2,045 feet. Gas broke in behind the 8⅝-inch at 1,952 feet and the 7-inch was run and cemented at 1,955 feet. The Medicine Bow company's well gauged 25,000,000 feet in the Upper Sundance and improved somewhat upon being drilled a little deeper. It marked a 4-mile extension to the east of the proven gas area.

Ohio Oil Co. No. 1 Wyoming Oil & Gas Co., C SE SW section 29-27n-89w, on the Bunker Hill dome, tested 3,500,000 feet through the drill stem at 1,488 feet in the Shannon sand. The 4¾-inch is at 1,209 feet. Prairie Oil & Gas Co. drilled a test to the Sundance on this structure and found that horizon dry at 6,791 feet, total depth. It was plugged back to test a show of gas, but failed to recover it in the Frontier, from which is was believed to be coming, and the conclusion was reached it was the Shannon. This test confirms that opinion.

Ohio Oil Co. No. 12 H.&C., SE SW sec. 35-20n-78w. Loc.; (first report).
Sinclair-Wyoming Oil Co. No. 21 Wertz, SE NW NW sec. 7-26n-89w. T.D. 4,048 ft.; cir. oil to free D.P.
Ohio Oil Co. No. 1 Wyo. O. & G. Co., C SE SW sec. 29-27n-89w. T.D. 1,488 ft.; completing.
Producers Oil Co. No. 1, CNL sec. 14-20s-88w. Drlg. 194 ft.
Ohio Oil Co.-California Co. No. 5 Cronberg-U. P., C NW NW sec. 25-21-79w. Drlg. 3,878 ft.
Medicine Bow Oil Co. No. 1 Hintze-Govt., C NE SE sec. 18-22n-78w. T.D. 2,347 ft.; P.B. to second Sundance at 2,140-80 ft.; shot with 40 qts.; tstg.
Ohio Oil Co. No. 1 Union Pacific, C NW NW sec. 20-21n-80w. Drlg. 1,914 ft.
Ohio Oil Co.-California Co. No. 3-A Kyle, C SW NE sec. 26-21n-79w. Drlg. 3,841 ft.
Ohio Oil Co.-Medicine Bow Oil Co. No. 1 U. P.-Wister, C NW SW sec. 17-22n-78w. T.D. 2,045 ft.; cmtd. 7-in. at 1,955 ft.; W.O.C.
Ohio Oil Co. No. 8 Dixon, SE NE SE sec. 34-20n-78w. Drlg. 5,431 ft.

Converse County

Wyoming Southern Oil Co. No. 1 Lane, C NW NE sec. 27-32n-69w. Spd. and S.D.
Elbe Oil Ld. & Dev. Co. No. 1 Benham, NW NE sec. 5-31-70w. M.I.M.; (first report).
Tom Carney No. 1 Beaver, SE SE SW sec. 28-35n-68w. M.I.M.
Chadron-Osage Oil Co. No. 1 State, SW cor. sec. 16-32n-69w. Drlg. 3,800 ft.; S.O. and G. through 2,200 ft. of water.
Wyoming Southern Oil Co. No. 3 Salisbury, C S½ NE sec. 26-32n-69w. R.U.; (first report).

Hot Springs County

Italo Pet. Corp. No. 1 Phebus-Govt., NW NW SW sec. 11-44n-98w. Bldg. rd.

Fremont County

Sinclair-Wyoming Oil Co. No. 2-C Muskrat, NE SW SW sec. 1-33n-92w. Cg. 7,739 ft. in dry white sd.
H. Kenyon Burch No. 1 Enos, CEL NE NE sec. 28-3n-1w. S.D.O. 970 ft.; no shows.

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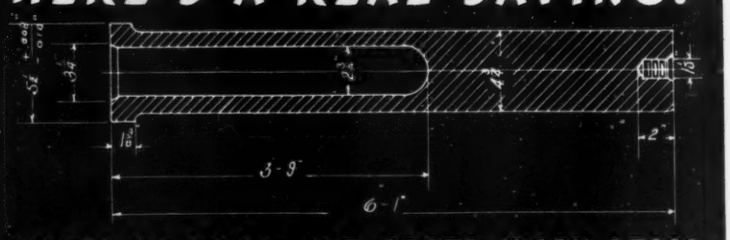

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Vulcan Foundry Company, Oakland, Calif.
Warren Foundry & Pipe Corp., Phillipsburg, N. J.
Washington Iron Works, Seattle, Wash.

Ben Stewart No. 1 Darnell, NE SE sec. 26-3n-1w. Drlg. 425 ft.

Johnson County

Carter Oil Co. No. 3 Rider, C NW SE sec. 17-48n-82w. Drlg. 6,465 ft. in Tensleep.

Lincoln County

H. M. Eller et al No. 4 Govt., SE NW SW sec. 32-19n-116w. T.D. 401 ft.; will test S.O. in lenticular sd. at 397-401 ft.

Place Oil Co. No. 1 Davis, SE SE SE sec. 9-26n-11w. Deepened to 1,156 ft.; tstg.

Natrona County

General Petroleum Corp. has made a location for a deep test, possibly to 8,000 feet, on the Coal Creek dome, about 12 miles east of the Midway dome and the same distance north and west of the Big Muddy field in its No. 1 Government, C NW SE section 21-35n-77w. It will be drilled with rotary. This structure was mapped in 1916 when the Big Muddy was discovered, but its depth at that time was considered prohibitive. The company has done extensive geological work in the area, including a geophysical survey. The objective horizons are considerably deeper than at Big Muddy.

Stanolind Oil & Gas Co. No. 1 T. P., Tensleep well in Salt Creek, is a near completion and is believed good for around 1,600 bbls. per day when put on production. It is bottomed at 4,145 feet. Top of the Tensleep was at 3,890 feet. It cored from 3,892 to 4,113 feet and a Schlumberger test indicated water at 4,085-4,143 feet. It was plugged back to 4,045 feet and a drill stem test at 3,990-4,010 feet indicated 400 bbls. of oil per day and no water. Another test at 4,055-4,113 feet indicated 1,409 bbls. of water per day. The 7-inch was cemented at 3,989 feet preliminary to completing. Elevation is 4,960 feet. It is half a mile north and a little east of the Tensleep well completed in 1930 at 3,900 feet for 1,949 bbls. of 27.5-gravity black oil.

General Pet. Corp. No. 1 Govt., C NW SE sec. 21-35n-77w. M.I.M.; (first report).

Stanolind O. & G. Co. No. 1 T.P., C NW SE sec. 26-40n-79w. T.D. 4,143 ft.; completing.

Wyalta Oil Co. No. 4 Govt., NW NW sec. 5-29n-81w. Cmtd. 6⅝-in. on top Sundance at 1,082 ft.; rng. 2-in. tbg. to test at 1,030-72 ft.

Wyalta Oil Co. No. 5 Govt., SW SW sec. 30-30n-81w. Tstg. at 1,021 ft.

Wyalta Oil Co. No. 6 Govt., NE SE NW sec. 5-29n-81w. Cmtd. 10-in. at 704 ft.; Dakota at 565-664 ft.

Niobrara County

Deihl Bros. No. 1 Berggren, NW sec. 23-35n-63w, (18 mi. SE Lance Creek). M.I.M.; (first report).

J. M. Huber Corp. No. 2 Lamb, NE SE SW sec. 27-36n-65w. Spdg.

Continental Oil Co. No. 5-B Schuricht, C SW SW sec. 5-35n-65w. Drlg. 3,542 ft.

Ohio Oil Co. No. 2 Taylor-O.P.C.-32, NW NW SW sec. 3-35n-65w. Drlg. 5,355 ft.

Ohio Oil Co. No. 2 Leo-O.P.C., NE NE SE sec. 35-36n-65w. R.U.R.

Ohio Oil Co. No. 1 Leo-O.P.C.-7, NW NW SE sec. 35-36n-65w. T.D. 3,201 ft.; cmtd. 8⅝-in. at 2,736 ft.

Ohio Oil Co. No. 10 Lamb-Acct. 2, C NE SE sec. 5-35n-65w. Drlg. 4,190 ft. in r.b.

Continental Oil Co. No. 1 Leach, SW NE NE sec. 29-36n-64w. T.D. 2,738 ft.; fsg.

Argo Oil Co. No. 4 Ford, SW NW SE sec. 33-36n-65w. Drlg. 4,970 ft. in r.b.

A. B. Cobb and Holly Dev. Co. No. 2 Novick, SE SE SW sec. 6-35n-65w. No report; (mystery well).

Continental Oil Co. No. 8 Otto Rohlff, SW SW SE sec. 31-36n-65w. Drlg. 3,754 ft.

Continental Oil Co. No. 10 Tom Bell Cattle, C SW NW sec. 34-36n-65w. Drlg. 5,576 ft.

MacKinnie Oil & Drlg. Co. No. 2 Thompson, NW NW NE sec. 7-35n-65w. S.D. 4,064 ft.; Sundance at 4,049-64 ft.; dry.

Park County

Resolute Oil Co. No. 1 Northern Pacific, C NE NW sec. 21-57n-101w. Drlg. 1,731 ft.

Resolute Oil Co. No. 1 Govt., C NE NE sec. 20-57n-101w. Drlg. 6,175 ft.

Texas Co. No. 4 Sonners, SE cor. sec. 29-51n-100w. Cmtd. 8⅝-in. at 3,370 ft.

Ohio Oil Co. No. 15 Woods O.P.C.-3, NW SE sec. 30-58n-99w. R.U.R.

Platte County

Dividend O. & R. Co., Inc., No. 1, CSL NW SW sec. 17-24n-66. T.D. 2,385 ft.; fsg. two strings.

Sublette County

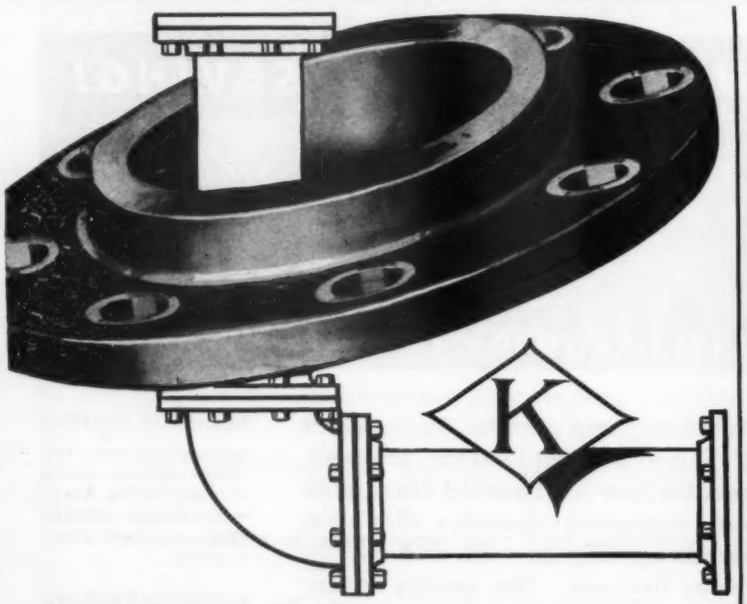
Texas Co. No. 6-J, NE SE SE sec. 27-27n-113w. T.D. 820 ft.; U.R. 8⅝-in.

Sweetwater County

Mountain Fuel Supply Co. No. 1-A Williams, C NE NE section 5-12n-95w, started as a water well for a deep test on the Wasatch formation on the Cherokee Ridge structure, to the northeast of the Powder Wash field, has been completed as a gas well at 540 feet. It gauged 2,160,000 feet a day and the gas will be used for fuel for the deep test 400 feet to the south. It had 200,000 feet of gas in a pocket at 200 feet and at below 300 feet ran into more gas which caught fire and burned down the rig. The 10-inch was set at 348 feet.

Mountain Fuel Supply Co. No. 1 Williams, C NE NE sec. 5-12n-95w. Ready to spud.

Mountain Fuel Supply Co. No. 1 Stone, C SW SW sec. 18-19n-103w. Cg. 4,028 ft.



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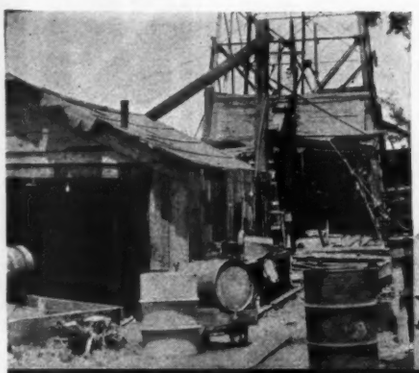

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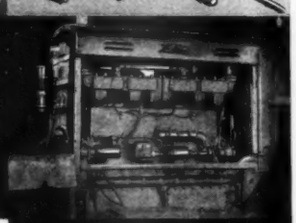

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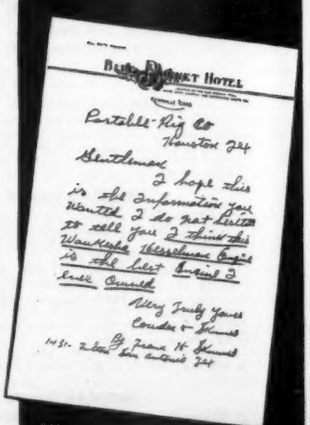

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Mountain Fuel Supply Co. No. 1 Union Pacific, C SE NE sec. 29-15n-104w, S of Baxter Basin. Loc.

Uinta County

E. A. Ottman et al No. 1 Govt., C SE NW sec. 26-14n-119w. S.D. 280 ft. for heavier equip.

Washakie County

Six wells were completed, of which three were dry and abandoned, on the Hidden dome in the past few weeks. Oil is found in a stray sand in the Frontier on the flanks of the dome.

Yale Oil Corp. No. 2, CEL SE SE section 25-48n-91w, was completed at 1,645 feet for 60 bbls. per day initial. Wyoming Oil & Refining Co. No. 8 Government, NW NE NW section 31-48n-90w, was abandoned at 1,700 feet. Bruce Teeter No. 5 Government, CSL SW SW section 30-48n-90w, made 78 bbls. first 24 hours on the pump at 1,586 feet. Wyoming Oil & Refining Co. No. 7 Government, SW NW NW section 30-48n-90w, was abandoned at 1,860 feet. Frontier topped at 1,844 feet had water. Christensen & Thorne No. 4 Government, NE SW SW section 31-48n-90w, was abandoned at 1,730 feet. Nystrom & Smoot No. 5 State, NE NE section 36-48n-91w, made 55 bbls. per day initial from sand at 1,618-41 feet.

Wyoming O. & R. Co. No. 9 Govt., CNL NE NW sec. 31-48n-90w. Drlg. 178 ft.
Ariton & Doyle No. 1 Govt., SW SW SE sec. 29-48n-91w. S.D. 1,750 ft.

Weston County

Le Faivre Oil Syndicate No. 1 Martin, a test on the Martin dome, which has been idle for more than a year, has resumed.

Le Faivre Oil Synd. No. 1 Martin, NW NW SW sec. 29-45n-68w. Drlg. 2,550 ft.; will U.R. 10-in. at 2,130 ft. for W.S.O.
Big Indian O. & Dev. Co. No. 1 George, SW SE NW sec. 12-47n-64w. Drlg. 363 ft.; (cor. loc.).
Osage Trust Co. No. 4, SE NW SE sec. 22-46n-63w. Drlg. 146 ft.

MONTANA

Big Horn County

Two small gas wells were completed in the Hardin field where production is developed for local consumption. Big Horn Oil & Gas Co. No. 37, NW NE SE section 20-1s-33e, was completed at 717 feet for 37,000 feet per day from the Frontier at 689-95 feet. C. H. Butler No. 1 fee, CSL SW SE section 18-1s-34e, made 42,000 feet from the Frontier at 702-21 feet.

Daniels Pet. Co. No. 1 May, C SE SE sec. 13-1s-33e. Drlg. 4,180 ft.

Carbon County

Miracle Oil Co. No. 2, CWL NE SE sec. 3-6s-23e. Cmtd. 6⅝-in. at 1,375 ft.
R. C. Tarrant No. 1 Heare, CWL NE NW sec. 14-6s-19e. Drlg. 321 ft.
Ohio Oil Co. No. 16 Kirt, C SE SE sec. 4-7s-21e. Drlg. 4,889 ft. in sh.
Geo. Muth et al No. 1, CSL SE SE sec. 23-6s-23e. S.D. 1,500 ft. indef.
Henderson Prod. Co. No. 1-H-11 Elk 11, SE SE NW sec. 35-9s-23e. Drlg. 930 ft.

Choteau County

Security Pet. Corp. No. 1 Johnson, NE sec. 23-26n-3e. R.U.C.T.

Daniels County

Whitetail O. & G. Co. No. 2 Wiley, NW NW NW sec. 10-36n-50e, Scobey dome. Cmtg. 10-in. at 1,000 ft.; (first report).

Fallon County

Johnson-Burke No. 1 Govt., SE NE SE sec. 6-8n-59e. Drlg. 700 ft. in Bearpaw sh.; (first report).

Fergus County

Judith Operating Co. No. 2 Scharf, CWL NW NE sec. 35-22n-17e. Res. at 3,180 ft.
C. L. Emmons No. 5 Govt., CEL SE NE sec. 24-22n-18e. Drlg. 740 ft. in Colo. sh.
White Top O. & G. Co. No. 1, C NE SW sec. 35-14n-19e. Drlg. 320 ft. in Quadrant.

Glacier County

Texas Co. No. 2 Tweedy, C NE NW section 21-35n-6w, an important extension on the west side of Cut Bank and half a mile southwest of Santa Rita No. 1 Lander, the biggest producer completed in the field, flowed 500 bbls. per day for two days through the casing before tubing with packer was run. It was reported a completion last week. It is flowing 370 to 380 bbls. per day through the tubing. It was completed at 2,967 feet with the 7-inch at 2,912 feet. It had the top of the Sunburst at 2,912 feet and the first oil at 2,940 feet. The saturation was at 2,940-67 feet. Elevation is 3,007 feet. The Sunburst seldom is a producer in Cut Bank. It is the horizon from which the Santa Rita well made as high as 2,000 bbls. per day. Santa Rita is now drilling its No. 2 Lander between the two producers.

There were two completions and six new operations reported this week. Glacier Production Co. No. 1 Morgan Unit, NE NE SE section 33-34n-5w, gauged 13,300,000 feet at 2,685 feet. It had approximately 3,000,000 feet in the Sunburst at 2,605-27 feet. The Cut Bank sand was at 2,652-84 feet. Elevation is 3,838 feet.

(Continued on Page 117)

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NEW ILLINOIS MAP

Official Nomenclature Map of the State of Illinois showing oil fields in green, gas fields in red with index giving official name of each field and location on map.

The map shows counties, county seats, townships and sections, also dry holes with elevations and total depths. An inset has been added showing principal known structural axes as of March, 1937.

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Canadian Fields

Completions and Operations in Northwest and in Ontario

By VICTOR LAURISTON

CHATHAM, Ontario, Aug. 14.—Crude oil and naphtha production from all Alberta fields in June totaled 191,634 bbls., compared with 175,997 bbls. in May. Turner Valley limestone production increased from 172,907 to 188,496 bbls., and Turner Valley shallow production from 765 to 915 bbls. Red Coulee light crude was down from 1,211 to 1,115 bbls., and Wainwright heavy crude from 1,114 to 1,058 bbls. In June there was a new production of 50 bbls. from the Ribstone field in East Central Alberta.

In Turner Valley, Royalite Oil Co. was the largest producing organization, with 44,132 bbls. in June. Royalite Nos. 3 and 4 Sterling Pacific gave an additional production of 39,614 bbls; while Turner Valley Royalties No. 1 ranked third with 29,088 bbls. B. & B. Co. No. 1 was fourth with 17,815 bbls., and West Side Royalties No. 1 came fifth with 10,505 bbls.

Production Is Increasing

The July figures for all Alberta fields will be considerably in excess of June, since deliveries from Turner Valley to the Calgary refineries alone in July totaled 194,134 bbls. compared with 162,071 bbls. in June. These figures are supplemented in the final official returns by substantial quantities of crude and naphtha marketed to smaller concerns and to purchasers at the well head. A further large increase may be anticipated for August, sales of crude having mounted rapidly since the end of July, with two new large completions and increased production of older wells due to acidizing. This new production already exceeds 2,000 bbls. a day.

Of the July refinery deliveries, Imperial Oil Refineries took 119,494 bbls., including 2,388 bbls. of clear naphtha, 42,348 bbls. of discolored naphtha and 74,760 bbls. of crude; compared with a total of 99,940 bbls. in June. British American Oil Co. in July took 2,502 bbls. of naphtha and 73,138 bbls. of crude, a total of 75,640 bbls., compared with 65,131 bbls. in June. Actual deliveries to the two refineries for the seven months of 1937 were 1,004,628 bbls. against 569,567 bbls. in the same period of 1936.

Sterling Pacific Producer

On the west flank of South Turner Valley, Royalite Oil Co. No. 5 Sterling Pacific, LSD 12, section 33-18-2w5, contacted the black lime marker in the Madison at 7,053 feet and discontinued drilling at 7,063 feet. Tubing was run and gas lift used to clear the hole of rotary mud, using gas from the other Sterling Pacific wells. When about 3,000 feet of fluid had been cleared, the natural pressure of the well finished clearing the hole. Early reports showed a flush production of 62 bbls. an hour. Later a 72-hour test yielded 3,869 bbls., or 1,288 bbls. a day. The gas pressure was the heaviest yet encountered in any of the west flank crude producers. Location is on the subdivision immediately south of No. 3 Sterling Pacific, now producing about 400 bbls. a day after treatment, and on the second subdivision north of No. 4 Sterling Pacific, now making 1,300 bbls. after treatment. No. 6 Sterling Pacific is on the subdivision between the two big wells.

Monarch Royalties No. 1, LSD 9, section 20-18-2w5, finished at 7,007 feet with initial production around 1,000 bbls. a day after treatment, has settled to slightly more than 650 bbls. a day, with about 1,250,000 feet of gas. Adjustments of the tubing submergence level are being made to increase production.

In section 28-18-2w5, Richland Royalties No. 3, LSD 14, which got the Madison lime at 5,607 feet, is below 5,927 feet with a continuous small flow of greenish crude and about 3,000,000 feet of wet gas. It is expected to finish around 6,060 feet.

Far South Test Planned

South of the present Turner Valley drilling, Saturn Oils, Ltd., of Vancouver, British Columbia, is planning to start its No. 1 test early in September on Calgary & Edmonton Corp. acreage in section 5-18-2w5. The company holds LSD's 9 and 16, and location will likely be in the latter, about 2¼ miles south of the nearest producer and nearly a mile south of the nearest drilling well.

Tests on West Fold

On the Okalta fold west of Turner Valley, Okalta Oils No. 6, LSD 3, section 30-18-2w5, is in the Benton shales below 620 feet, after cementing surface casing at 285 feet. The Madison limestone is expected around 5,000 feet. South End Petroleums No. 1, LSD 6, section 36-18-3w5, is in the Lower Fernie shales below 5,000 feet with some oil and gas shows, and expected to get the Madison around 5,250 feet.

North Turner Valley

In North Turner Valley, Phillips Royalties No. 1, LSD 16, section 16-20-3w5, has resumed from 3,725 feet after straightening hole. Home Oil Co. No. 1 Millarville, LSD 8, section 33-20-3w5, is below 3,450 feet after getting through the Benton formation.

In South Turner Valley, Carleton Royalties No. 1, LSD 2, section 28-18-2w5, naphtha producer, which has settled to about 16 bbls. a day, is being given treatment. B. & B. Co. No. 1, LSD 12, section 28-18-2w5, after treatment increased its production from 525 to 997 bbls. with gas flow up from 3,800,000 to around 7,000,000 feet. It later dropped to 757 bbls. on a 24-hour test, and adjustments are being made for maximum production. Century Royalties No. 1, LSD 14, same section, which increased from 80 to 350 bbls., has settled to around 250 bbls. Miracle Oils No. 2, section 5-19-2w5, previously about 60 bbls. a day, is holding around 100 bbls. since acidizing.

East Side Drilling

In the Aldersyde area, east of Turner Valley, Ranchmen's Gas & Oil Co. No. 1, LSD 16, section 13-20-29w4, is below 7,223 feet with continued small oil and gas showings. On the New Valley structure, northeast of Turner Valley, McLeod Oil Co. No. 1, LSD 4, section 6-21-2w5, has resumed from 8,380 feet after repairs to derrick. It is in the Lower Blairmore, in a shale horizon with considerable oil saturation, and is expected to get the Madison around 8,700 feet. A potential commercial production of greenish crude was encountered in the cardium sandstone, but without gas pressure to flow the oil. Gas and additional oil production are expected in the Madison.

Moose Dome Oil Show

On the Moose dome west of Calgary, Moose Oils No. 2, LSD 8, section 29-22-6w5, has encountered black crude in the Devonian limestone at 1,532 feet. About 15 bbls. were bailed, samples testing 42.9 gravity. Gas flow was about 1,500,000 feet a day. Potential production was estimated 10 bbls. a day, and the hole will be deepened. The showing was unexpected, the first production, on the basis of the log of Moose Oils No. 1, being looked for about 90 feet deeper. Outside Moose No. 1, this is the first important oil showing encountered in the Devonian limestone at 240 feet. The log shows that gas was struck at 1,528 feet and the first oil at 1,532 feet, with additional oil and gas at 1,537 feet. Drilling was continued to 1,553 feet with a 16-inch hole. A definite production test will probably be made before deepening.

Tests in the Foothills

In the Forest Reserve area west of Olds, Hunter Valley Oil Co. No. 1 McLaren, LSD 12, section 13-31-10w5, is below 8,056 feet with continued oil and gas showings. On the Duncan structure, Spindletop Oils No. 1, LSD 4, section 1-30-6w5, is below 1,000 feet with gas and water cemented off and 18⅝-inch casing set. On the Kootenay dome west of Calgary, Roxana Petroleums No. 1, section 8-24-7w5, got the Banff shale and Devonian limestone contact at 3,080 feet, with a considerable increase in gas flow. On the Birch Ridge structure, Elbow Oils No. 1, LSD 11, section 35-22-5w5, is below 5,185 feet and cleaning out after caving.

On the Highwood-Sinclair structure south of Turner Valley, Maple Leaf Royalties No. 1 Banner, LSD 6, section 34-17-3w5, is in the Lower Blairmore formation below 3,013 feet. The test has been taken over by Green Valley Petroleums, Ltd., of Calgary and will be completed at Green Valley-Banner No. 1, Empire Drilling Co. handling the contract. Lethbridge Petroleum & Refineries, Ltd., of Lethbridge has taken a 10 per cent interest in the test.

On the Watson structure, Mar Jon Oil Co. No. 3, LSD 3, section 4-10-2w5, is below 5,520 feet with considerable gas, and expected to get commercial production around 6,000 feet. In the Pincher Creek area, Weymarn Petroleums No. 2, LSD 5, section 7-6-1w5, has been deepened to 6,390 feet, encountering additional showings at intervals. Tubing will be run and the hole below 4,500 feet acidized. It will ultimately be deepened to the Madison limestone. In the northern foothills, an Imperial Oil drilling crew has mudded off the gas flow from Northwest Co. No. 1 Pouce Coupe well. The well, drilled some years ago, with a potential flow of 10,000,000 feet a day, blew open and caught fire this spring.

Battleview Strike

In the Wainwright field, East Central Alberta, Battleview Oils No. 1, NW section 32-47-5w4, encountered a sand at 1,871 feet, and was deepened to 1,894 feet, developing a gas flow estimated at 11,000,000 feet a day. The flow was encountered at the Benton-Lower Cretaceous contact in a coarse sand with heavy oil saturation. Production casing has been set and the well is being tested. The crude is between 25 and 32 gravity and potential production has been estimated as high as 200 bbls. a day. The Battleview anticline, some 22 miles northeast of Wainwright, was discovered two years ago by Dr. G. S. Hume of the Geological Survey of Canada, who estimated the first oil sand on top of the Lower Cretaceous at less than 2,000 feet. Following Doctor Hume's report, Pacalta Oils, Ltd., of Vancouver took out a prospecting permit on the immediate acreage, subleasing to Battleview Oils, Ltd., headed by John L. Graham and financed by Toronto capital. The test, started last May, was drilled by Frank Stevens of Edmonton. The structure has been blanketed by Battleview Oils, Ltd., of Toronto and Pacalta Oils, South End Petroleums and Vanalta, Ltd., of Vancouver, British Columbia. Battleview No. 1 encountered gas shows in the upper horizons at 1,425 and 1,610 feet. There is a second potential oil horizon around 2,010 feet.

Northwest of Wainwright, Altoba Gas Co. No. 2, NE section 35-47-7w4, has derrick up. The same company will also drill a test in the Lloydminster field near the Alberta-Saskatchewan boundary.

Border Fields

In the Lethbridge area, southern Alberta, Lethbridge Petroleum & Refining No. 1, LSD 12, section 11-8-22w4, is in the Colorado formation below 2,015 feet with 15½-inch hole. The well is logging 400 feet higher than Texas-Imperial deep test. In the Steveville area, Anaconda Oil Co. No. 1, LSD 15, section 9-22-12w4, is in hard shale below 560 feet with oil expected between 2,000 and 2,500 feet. In the western extension of the Red Coulee field, Home Oil Co. No. 1, LSD 7, section 1-1-18w4, is below 450 feet.

In the Taber field, Plains Petroleum Corp. No. 1, LSD 14, section 29-9-17w4, has drilled out cement set at 3,302 feet for a test of the Ellis sand. Plains No. 2, LSD 11, section 25-9-17w4, is rebuilding derrick destroyed by fire, to resume from 2,300 feet. Plains No. 3, section 26-9-17w4, is below 628 feet.

Geological Survey Operations

Dr. G. S. Hume of the Geological Survey of Canada has completed an examination of the area from the north end of Turner Valley to the north end of the Sarcee Reserve, including the area between Turner Valley and the Jumping Pound structure and east of the foothills as far south of the New Valley structure. He is now beginning a detailed examination of stratigraphy and structure of the extreme south end of Turner Valley, working as far north along the Turner Valley west flank as the season will permit. The work will involve considerable revision of the geological maps of South Turner Valley.

Ontario Drilling

In Chatham Township, Kent County, Ontario, Union Gas Co. No. 13, Lot 9, Concession 13, has a natural flow of 698,000 feet a day from the upper pay, the lower sand failing to show production. It was not shot. Union No. 14 has been located in SE cor. Lot 8, Concession 13. Union No. 13 is the fifth and largest producer in this area, which now has a

(Continued on Page 138)

WASSON AREA PRODUCER IS OUTSTANDING DEVELOPMENT

By L. E. BREDBERG

FORT WORTH, Tex., Aug. 16.—Production of 195 bbls. of oil an hour by Continental Oil Co. No. 1 McCarty Moore in the new Wasson area in northern Gaines County was the outstanding development last week in the North Basin area in the West Texas district and served to emphasize the major importance of recent discoveries in that area. Continental's producer made its big flow after having been treated twice with acid, using 3,000 gallons the first time and 4,000 gallons the second time, with total depth 4,995 feet in lime. Prior to treating, it was swabbed in and flowed through tubing at estimated rate of 25 to 30 bbls. an hour. It is not only the first big well in the Wasson pool but also is the first big producer in the entire North Basin area. It is in the SW cor. section 46, Block AX, Public School Lands Survey, approximately 1½ miles northeast of the Amon Carter-Continental discovery well and about the same distance southwest of the Amon Carter-Continental No. 1 Moore Langdon producer in section 44, Block AX.

One mile due south of the Continental well, Amon Carter No. 2 Sharp, in the SW cor. section 47, Block AX, is testing after treating with acid, and also is showing for estimated 30 to 40 bbls. an hour. The interesting Amerada Petroleum Corp. No. 1 Mathews, in section 417, Block G, C.C.S.D.&R.G.N.G.R.R. Survey, 1½ miles southwest of the Wasson discovery well, showed water thought to be bottom-hole water when tested through tubing at total depth 5,018 feet, but is testing through tubing with packer set at 4,980 feet, with perforations above, and on early swabbing tests indicated production of oil at the rate of 10 bbls. an hour. Phillips Petroleum Co. and Indian Territory Illuminating Oil Co. No. 1 Brand, 1½ miles northwest of the Wasson discovery well, has cemented the 7-inch oil string after drilling saturated lime above total depth 4,927 feet, and will likely test during the current week. Conservative estimates indicate that the area proved for oil production in the Wasson area now totals around 4,000 acres.

Wasson Pool

Amerada Petroleum Corp. No. 1 Armstrong, wildcat in section 456, 4 miles west of the Wasson pool, is drilling plugs from 7-inch casing set at 4,752 feet, with total depth 4,992 feet in lime, to test shows encountered between 4,939 feet and total depth. On the west side of Gaines County, Continental Oil Co. No. 1 Jones encountered sulfur water at total depth 5,156 feet in lime and is testing after shooting at plugged back depth of 5,040 feet. Four miles north of this test, Argo Oil Co. No. 1 Jones is drilling below 5,015 feet in lime with no porosity and no shows yet encountered.

Yoakum County

Interest in the North Basin area was not restricted to Gaines County operations, however. About 15 miles north and slightly west of the Wasson area, and in Yoakum County, Bohago Oil Co. and Bond Oil Corp. No. 1 West cemented 7-inch casing at 5,034 feet after coring saturated lime from 5,130 feet to total depth 5,183 feet, giving promise of a new producer, and probably a new field for Yoakum County. It is in the C SE NW quarter section 606, Block D, John H. Gibson Survey, about 8 miles west and 2 miles north of the Bennett pool. Geological opinion seems to be divided over whether it is located on the same structure as the producers in the Bennett pool, with the majority leaning toward the belief that it is not. Plugs have been drilled from the 7-inch casing and it is now bailing to test.

Texas Co. No. 1 Walker, Yoakum County wildcat in section 794 in the southern part of the county, and on a northwesterly trend from the Wasson area in Gaines County, is drilling below 4,790 feet in lime, using cable tools. It is testing a geophysical high, with its outcome being awaited with unusual interest. During the past 30 days a strong royalty play has been under way on a northwesterly trend from the Wasson area through Texas Co. No. 1 Walker location and on to the northwest for a number of miles. Two other tests in this area, Denver Producing & Refining Co. No. 1 Whittenberg in section 831, only 2 miles east of Texas Co. No. 1 Walker, and Moore Brothers No. 1 Cleveland, in section 706, are also due to reach the expected pay zone within the next few weeks, as both are drilling below 4,750 feet in the big lime formation.

Sand Hills Area

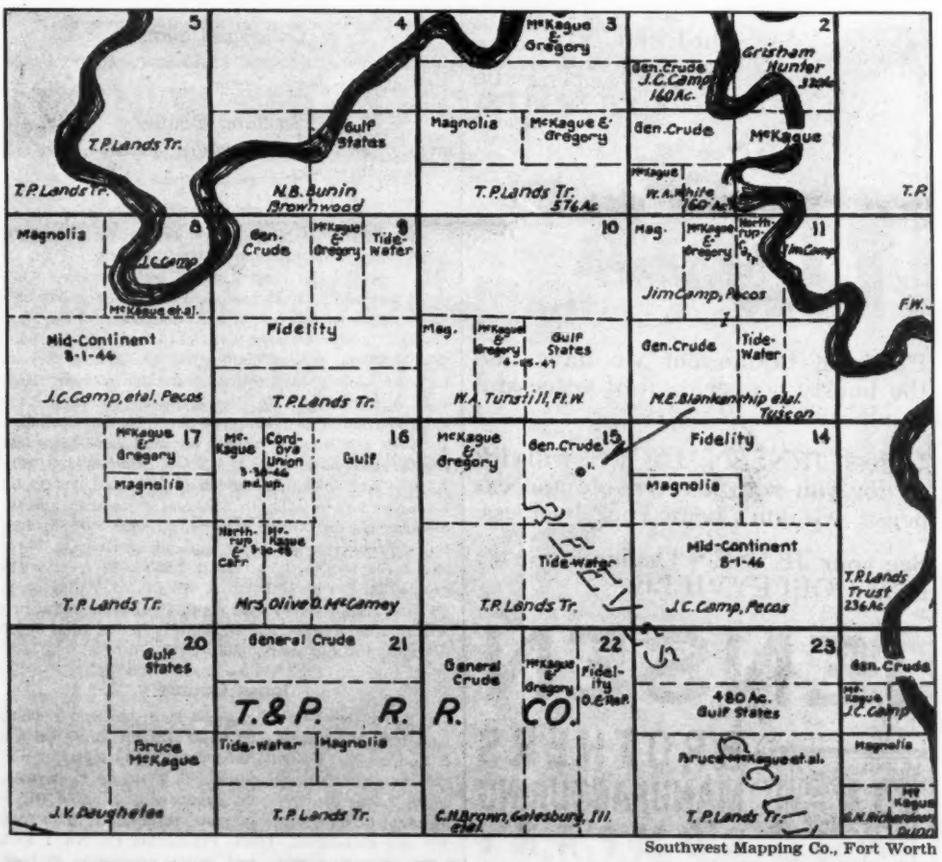
Further important developments in the Sand Hills district in western Crane County are expected to materialize this week. Gulf No. 5 Waddell and others, on official potential test, rated 8,179 bbls. of 45.1 corrected gravity oil, from total depth 5,971 feet in Ellenberger lime. Approximately one-half mile east and slightly north of this strike, Sinclair Prairie Oil Co. and others No. 2 Tubb-Unit is coring around 5,775 feet, looking for top of the Ordovician series. Gulf No. 5 Waddell topped the Simpson at 5,806 feet, developed its big production in the last 17 feet above total depth of 5,971 feet, with top of Ellenberger placed at 5,956 feet. Loffland Brothers No. 3 Tubb-Gulf, 1½ miles southeast of Gulf No. 5 Waddell, is also right on top of the expected pay and is coring around 5,800 feet in lime.

Development in the new University pool in northern Crane and southern Ector counties is likely to be held up for some time, pending final hearing of a suit filed by the state of Texas on behalf of the public school fund to set the boundary lines of Block 35, University lands. About a dozen individuals are claiming a vacancy strip along the west, north, and east sides of Block 35. Some of this claimed vacancy has been producing for a number of years. Recently, the University of Texas sold leases on its lands in the block for fancy prices to various major and independent operators.

An important extension to the Harper pool in central Ector County is being completed by Amon G. Carter and others No. 1 Parker, in section 15, Block 44, Township 2s, T.&P.R.R. Survey. Located 2 miles northwest of the Harper pool, it started flowing by heads from pay drilled between 4,080-92 feet in lime and is drilling ahead below 4,150 feet with production estimated good for several hundred barrels daily. One and one-half miles southwest of this new wildcat producer, Wentz Oil Corp. No. 1 Moss, in section 28, same survey and block, has cemented 7-inch casing at total depth of 3,768 feet in lime and anhydrite. On the Yates sand marker it is reported checking about 50 feet higher than the Carter and others new producer.

Cochran County

M. S. Ingleright and others No. 1 Duggan, one-half mile northwest of the discovery well and lone producer in the Duggan pool in southeastern Cochran County, flowed 186 bbls. of oil in six hours through open tubing after treating in successive stages with 1,000 and 4,000 gallons of acid. After the six-hour gauge it was pinched to a 21/64-inch choke and flowed into tanks at



Southwest Mapping Co., Fort Worth

General Crude Oil Co. No. 1 T. P. Lands (Kloh), in northwestern Reeves County, has a showing of oil from the Delaware sand. If it proves a producer it will open the first production in the county. The nearest production is in the Mason field, 7 miles northeast, in Loving County

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rate of 165 bbls. a day. Total depth was 5,060 feet, with one-fourth bailer of sulfur water in two hours from 5,058½-60 feet. It was plugged back 5 feet, shutting off the water, before treating. P. N. Wiggins, Jr., and C. E. Hyde No. 1 Dean, wildcat, 4 miles northwest of the Ingleright producer, is drilling below 4,800 feet in lime, with cable tools, with pay zone expected within the next 200 feet. It is estimated that around $1,000,000 has been expended for leases and royalties within a 12-mile radius of the Duggan pool within the past six months.

WEST CENTRAL AND NORTH TEXAS

Lewis Production Co. No. 1 Morrow, one-fourth mile south of the discovery well in the new Rotan pool in Fisher County, West Central Texas district, flowed 1,651 bbls. of oil in six hours through open tubing and casing from total depth 3,549 feet to register official daily potential of 6,600 bbls. daily. It topped pay at 3,544 feet, about 10 feet lower structurally than top of pay in the discovery well. The big initial posted by this well has resulted in sharp activity in the immediate area and also in plans for a number of wildcats in Fisher County.

The Railroad Commission last week issued an order for 10-acre spacing in the new Avoca pool in Jones County, where Humble and Iron Mountain No. 1 Olander recently opened a field from a new pay in the lower Canyon series.

Chief interest in North Texas is being held in Grayson County, where Denver Producing & Refining Co. No. 1 Cannon estate, in the Elizabeth Barnes Survey, 2½ miles north of Whitesboro, is making initial pumping tests. Early testing indicates water is being exhausted and that the well will make 80 to 100 bbls. of oil daily. It had sand at 2,385-96 feet.

Two extension tests in the Bolivar area in northwestern Denton County showed salt water after cementing casing on top of the shallow sand, and may be deepened. They were Trin-Tex Oil Co. No. 1 Forrester, one-half mile southwest of the Lander discovery well, and Rea and others No. 1 Freeman, 1 mile south of the discovery.

CENTRAL TEXAS COMPLETIONS

Brown County

R. M. Ragsdale No. 1 Taber, lime 2,443-61 feet, treated with 3,000 gallons acid, initial production 489 bbls.

Callahan County

Ungren & Frazier No. 9 Jackson C, sand 1,195-1,207 feet, initial production 12 bbls.

Eastland County

Hoffman & Page No. 1 Justice, total depth 1,450 feet, dry and abandoned.

Jack County

Algord Oil Co. No. 2 Jones, broken oil sand 3,091-3,236 feet, initial production 435 bbls. Big Six Oil Co. No. 2 Smith, gas sand 2,889-95 feet, oil sand 2,895-2,922 feet and 2,930-47 feet, initial production 543 bbls. of oil and 2,500,000 feet of gas. Cockburn Oil Co. No. 2 Clayton, broken oil sand 2,979-3,115 feet, initial production 485 bbls. Everts Drilling Co. No. 2 Mary Bryson, oil sand 3,078-91 feet, initial production 50 bbls. Hammon & Herbert Oil Co. No. 7 Rhodes, oil sand 2,343-2,521 feet, initial production 50 bbls. Hanlon-Buchanan, Inc., No. 1-A Rhodes, broken oil sand 2,980-2,998 feet, initial production 75 bbls.; No. 4 Sampley, oil sand 2,319-34 feet, initial production 10 bbls. Indiana Oil Co. No. 1 Newman, total depth 3,303 feet, dry and abandoned. Mar-Tex Oil Co. No. 10 Clayton, oil sand 3,010-21 feet, initial production 133 bbls. Mullendore, Berry & Berry No. 2 Clayton-North, oil sand 2,985-3,088 feet, initial production 750 bbls. Perry & Woody No. 7 Clayton B, oil sand 2,941-65 feet, total depth 2,967 feet, initial production 125 bbls. A. Z. Kouri No. 1 Smith, total depth 620 feet, dry and abandoned.

Jones County

Condor Petroleum Co. No. 2 Holt, oil sand 1,906-13 feet, initial production 60 bbls. Brown Eagle Oil Co. & Roberts No. 4 Lewis, total depth 2,014 feet, dry and abandoned. W. B. Hamilton No. 1 Bertie Zant, total depth 2,300 feet, dry and abandoned. Humble Oil & Refining Co. No. 1 Teaff Estate, total depth 5,574 feet, dry and abandoned. Lewis Production Co. No. 1 Rutledge, oil sand 1,928-36 feet, initial production 95 bbls. Petroleum Producers Co. No. 4 Harvey, oil sand 1,648-60 feet, initial production 50 bbls. L. B. Tannehill No. 1 Willis, total depth 2,446 feet, dry and abandoned. Ungren & Frazier No. 12 Dorsey Estate, sandy lime 2,142-66 feet, initial production 160 bbls.

Shackelford County

Ben Banner No. 1-135 Nail, total depth 1,665 feet, dry and abandoned. J. L. Hart No. 1 Sanders, total depth 817 feet, dry and abandoned. Roeser & Pendleton No. 39 Dawson & Conway, oil sand 1,606-15 feet, total depth 1,633 feet, initial production 100 bbls.

NORTH TEXAS COMPLETIONS

Archer County

Deep Oil Development Co. and Lindsay No. 4 Wilson, 2,204-14 feet, 145 bbls. Fraser and others No. 2 Coleman, 1,430 feet, dry.

Cooke County

Seitz Comegys & Seitz No. 1 J. C. Whaley, 1,501 feet, dry. Trumpter Oil Co. No. 1 J. Paulter, 1,391-95 feet, 5 bbls.

Denton County

Bolivar Drilling Co. No. 2 J. P. Knox, 1,470-1,501 feet, 1,000,000 feet of gas. A. A. Landers No. 1 Gibson, 1,600-03 feet, 1,000,000 feet of gas. Reagan & Davis No. 1 B. H. Williams, 100 feet, temporarily abandoned.

Montague County

Sinclair Prairie and others No. 17 D. T. Holt, 1,707-40 feet, 175 bbls.

Wichita County

P. H. Flynn No. 1 Herron A, 751 feet, dry. Hawkins & McQuigg No. 1 McClure, 2,040 feet, dry. Melat & Graham No. 2 Munger A, 3,705-3,867 feet, 800 bbls. Pois & Schulz No. 6 Foster A, 1,753-60 feet, 10 bbls.

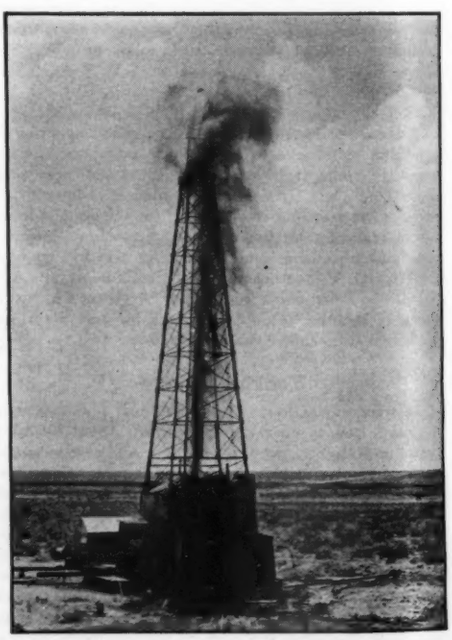
Wilbarger County

Phillips Petroleum Co. No. 198 Waggoner, 3,043-59 feet, 1,000 bbls.

Young County

Green Production Co. No. 1 Martin, 1,001 feet, dry. Jack Kadane No. 1 Manley, 3,370-92 feet, 10 bbls. D. P. Kenyon No. 1 Wilkinson, 200 feet, temporarily abandoned. L. A. Long & D. P. Farris No. 1 Brogden,

Western Ward Discovery



C. H. Mahres and Kenneth Slack and others No. 1 Pat Wilson, discovery well in western Ward County, about 20 miles from production in Delaware sand and near the dividing line between the Permian lime and Delaware sand basins. Total depth 5,100 feet. Plugged back to 5,098 feet to shut off water and shot with 100 quarts and after the well had cleared itself made 32 bbls. with 1,000,000 feet of gas.

3,622 feet, dry. R. E. Skinner No. 1 J. M. Davidson, 830 feet, dry. West & Honea No. 8 Stewart, 840-64 feet, 5 bbls. Worth Oil Co. No. 2 E. Hall, 736 feet, dry.

PANHANDLE COMPLETIONS

Carson County

Cities Service No. 13 Magnolia D, pay 2,945-3,045 feet, total depth 3,050 feet, pumping, 613 bbls. per day.

Gray County

Cities Service No. 8-B Hughey, pay 3,165-3,285 feet, total depth 3,295 feet, pumping, 685 bbls. per day; No. 4 Sailor, pay 3,208-78 feet, total depth 3,282 feet, pumping, 876 bbls. per day. Dye and others No. 8 Holmes, pay 3,173-3,278 feet, total depth 3,278, pumping, 578 bbls. per day. I.T.I.O. No. 9 A. Smith, pay 3,185-3,270 feet, total depth 3,270 feet, pumping, 846 bbls. per day. King Oil Co. No. 1-C Baer, pay 3,258-63 feet, total depth 3,279 feet, pumping, 266 bbls. per day. Mart Oil Corp. No. 2 Ayer, pay 2,160-2,325 feet, total depth 2,932 feet, testing, 10,500,000 feet gas per day.

Hutchinson County

Continental Oil Co. No. 4-C Johnson, pay 3,038-53 feet, total depth 3,055 feet, pumping, 664 bbls. per day. Kerlyn Oil Co. No. 1 Starnes, pay 3,030-90 feet, total depth 3,114 feet, plugged back 3,090 feet, pumping, 238 bbls. per day. J. R. Phillips and others No. 1 Twitchell, pay 3,020-67 feet, total depth 3,067 feet, pumping, 599 bbls. per day. Phillips Petroleum Co. No. 1 Supreme, total depth 2,868 feet, junked and abandoned. Sinclair Prairie No. 14 M. Weatherly, pay 3,030-64 feet, total depth 3,095 feet, pumping, 131 bbls. per day. Walero Oil Co. No. 4 Haile, pay 3,025-83 feet, total depth 3,083 feet, pumping, 327 bbls. per day.

Moore County

Continental Oil Co. No. 1 Armstrong, pay 2,900-3,080 feet, total depth 3,098 feet, testing, 53,600,000 feet of gas. Phillips Petroleum No. 1 Emily-Nell, pay 3,050-3,190 feet, total depth 3,641 feet, plugged back 3,208 feet, testing, 51,400,000 feet of gas; No. 1 Stanley Marsh, pay 2,935-3,220 feet, total depth 3,300 feet, testing, 56,200,000 feet of gas.

Gulf Coast Fields

(Continued from Page 108)

doned No. 1-E Lawrence after testing salt water in a drill stem test of sand at 6,515-35 feet.

Four completions were reported in the Amelia and West Beaumont fields during the week. Humble Oil & Refining Co. No. 6 Peveto tested 652 bbls. daily through quarter-inch choke with casing perforated at 6,771-75 feet. Its No. 7 Phelan was good for 682 bbls. through quarter-inch choke at 6,775 feet, and No. 8 Tyrell-Combast made 624 bbls. daily at 6,783 feet. Sun Oil Co. No. 1 Gailey flowed 8 bbls. an hour through an eighth-inch choke at 5,883 feet.

At West Hackberry, Cameron Parish, Louisiana, W. T. Burton No. 1 Henry, drilled on a 2-acre tract, tested 643 bbls. daily through a quarter-inch choke in sand at 3,693-3,740 feet. Humble Oil & Refining Co. No. 1 Hanszen, deep wildcat, Chalkley prospect, Cameron Parish, has been abandoned as dry at 9,628 feet. The latter company got a gas well in its No. 3 Wilbert, Bayou Blue, Iberville Parish, completed at a plugged back depth of 1,133 feet. This company has abandoned its No. 10 Gumbel, deep test at Darrow, Ascension Parish, after plugging back to 6,917 feet from a total depth of 7,152 feet.

Sun Oil Co. No. 3 Talley, Midway area, Lamar County, Mississippi Gulf Coast district, made a 15-minute drill stem test in sand at 5,795-5,856 feet, recovering 6 joints of mud. The test was made through three-eighths inch choke on bottom with top open.

Rocky Mountain Area

(Continued from Page 113)

Hannah-Porter No. 4 All.-130, CWL SW SE section 6-32n-5w, in the southwestern part of the field, was better than the average, swabbing 225 bbls. first 24 hours at 2,926 feet. It had a show of oil in the Sunburst at 2,855-78 feet and the pay in the Cut Bank at 2,882-2,924 feet.

Texas Co. No. 5 Tribal-121, C SW SE sec. 36-33n-6w. Bldg. rig; (first report).
Texas Co. No. 3 State (M-455), C NE NW sec. 16-32n-5w. Cellar; (first report).
Texas Co. No. 7 Morrison, CEL SW SE sec. 22-35n-6w. Loc.; (first report).
Glacier Prod. Co. No. 1 Monroe Unit, SW SW NE sec. 23-33n-5w. Loc.; (first report).
Lawler-Hoer No. 2 Downen, SW SE SW sec. 9-33n-5w. R.O.G.; (first report).

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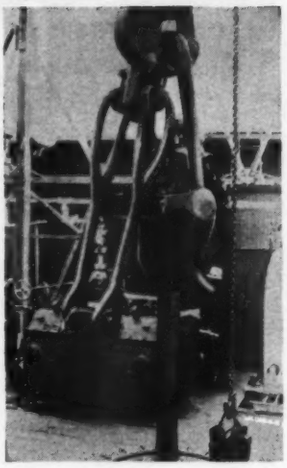

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Indian Oil Co. No. 3 Haglund, Sr., C SW NW sec. 13-34n-6w. Spdg.; (first report).
Wheatman Pet. Co., Ltd., No. 1 Walker, C SW sec. 35-36n-8w. Rig.; W.O. tools.
Santa Rita O. & G. Co. No. 2 Lander, CWL SW SE sec. 16-35n-6w. Drlg. 800 ft.; 13⅜-in. at 421 ft.
K. D. Pardee No. 1 Jackson, CSL SE NE sec. 35-34n-6w. Drlg. 125 ft.
Santa Rita O. & G. Co. No. 2 Govt., C SE SW sec. 4-32n-5w. Drlg. 2,725 ft.
Montana Headlight Oil Co. No. 8 Yunck, NW SW NW sec. 1-34n-6w. Drlg. 2,100 ft.
Montana Headlight Oil Co. No. 7 Yunck, SW NW NW sec. 1-34n-6w. Drlg. 2,470 ft.
R. C. Tarrant No. 6 Long-Miller, C SW NW sec. 24-34n-6w. Drlg. 1,600 ft.
Glacier Prod. Co. No. 1 Johnson Unit, NE NE SW sec. 11-33n-5w. Drlg. 2,455 ft.
Drumheller Oil Trust No. 1 fee, C NE SW sec. 17-34n-6w. Drlg. 2,175 ft.
Glacier Prod. Co. No. 1 Long, CWL NE NW sec. 22-32n-5w. Drlg. 2,430 ft.
Glacier Prod. Co. No. 1 Barrington, 820 ft. from N line and 2,640 ft. from W line, sec. 19-33n-5w. T.D. 2,955 ft.; shot 7 and 15 qts.; C.O.
A. B. Cobb No. 5 Walburger, C NE SE sec. 35-35n-6w. Ready to spud.
Grant Oil Co. No. 1 Rueffen, C SW SE sec. 5-32n-5w. Drlg. 2,905 ft.
K. D. Pardee No. 1 Corrigeaux, NE NE SE sec. 35-34n-6w. Cmtd. 7-in. at 2,960 ft.; S.D.
A. R. Pardee No. 1 Anderson, C SE SW sec. 31-32n-5w. T.D. 2,900 ft.; cmtd. off tools at 2,895 ft.

Hill County

Nadeau Brothers No. 1 fee, NW NW SE section 33-34n-17e, Cassidy dome, was abandoned at 765 feet. It had some gas with water, but was unable to shut off the latter. Rig was then moved to CWL SE NE section 33 and drilled to 910 feet. It had a show of gas with water in the Virgelle shale, and was abandoned.

These wells were drilled for the purpose of obtaining a gas supply for the town of Havre, for which Frank Browne, trustee, has a 20-year franchise. The Works Progress Administration has authorized a loan of $162,000 to the town for a distributing system in competition with the private company now serving the town. This loan is conditioned upon obtaining a dependable gas supply for 20 years. An extension of 90 days has been granted the town in which to make further efforts.

Judith Basin County

Fletcher E. Hunt No. 3, NW SE NE sec. 30-14n-15e. T.D. 1,600 ft.; cmtd. 6⅝-in.; top of Penn.

Musselshell County

R. C. Tarrant and Johnson No. 24-A Govt., SW NW NW sec. 25-11n-24e. Drlg. 1,107 ft.

Petroleum County

H. C. Rowland No. 1 Kalispel, NE NE SE sec. 35-14n-25e. Drlg. 508 ft.; (C.D.) in Colo.
O. B. Canfield No. 1 Govt., CEL SE NE sec. 21-17n-24e. S.D. 735 ft.; (C.D.) in Kootenai.

Pondera County

Kirk Oil Co. No. 1 Kellogg, SE NE NE sec. 31-28n-4w. T.D. 2,296 ft.; drlg. up tbg.

Roosevelt County

John W. Schmidt et al No. 1 Freu, NW NW NE sec. 21-28n-50w. Drlg. 700 ft.

Toole County

The Kevin-Sunburst field had two completions and three new operations.

Lion Producing Co. No. 3 Haugen, SE NE SE section 11-35n-3w, made 35 bbls. per day from the Sunburst at 1,492-1,530 ft.

Burke & Kluth No. 1 Overby, NW cor. section 30-34n-2w, is pumping 5 bbls. per day with considerable water at 1,555 feet. It had the Sunburst at 1,260-80 feet and the Ellis at 1,550-55 feet.

M. W. Cassidy No. 1 Mary, CEL NE NW sec. 5-34n-3w. Spdg.; (first report).
Adlon Oils & Mines, Ltd. No. 2 Ward, C SE SE sec. 29-35n-3w. Drlg. 200 ft.; (first report).
Anaconda-Kevin Oil Co. No. 2 Govt., NE SW NW sec. 19-35n-2w. Drlg. 410 ft. (first report).
E. C. Ellis No. 1 Ward, C SE NE sec. 29-35n-3w. Ready to spud.
Raymond E. Dockery No. 1 Gunderson, NE SE NW sec. 19-35n-2w. Drlg. 825 ft.
C. T. Olen No. 7 Engemoen, C NW NW sec. 14-35n-2w. Drlg. 1,745 ft.
C. L. Tomlinson No. 1 Davidson, NW NE SE sec. 28-35n-3w. Drlg. 875 ft.
A. E. Crumley No. 2 Govt., SW NE NE sec. 35-36n-2w. Drlg. 940 ft.
McKnight & Pinkney No. 5 Seabrook, NW NE SW sec. 19-35n-2w. S.D. 1,400 ft.
E. O. Reickhoff No. 3 Baum, SW SW SE sec. 3-35n-3w. S.D. 110 ft.
Big West Oil Co. No. 1 Jackson, C SW NE sec. 30-35n-3w. T.D. 1,881 ft.; cont. 1,873 ft.; acid.
California Co. No. 7 Neumann, NW NW NE sec. 23-35n-2w. Loc.
California Co. No. 6 Neumann, NE NW NE sec. 23-35n-2e. Loc.
McCurdy No. 1 Hollowell, C SE SW sec. 1-35n-3w. S.D. 1,200 ft.
Larson & Ness No. 1 Horner, C NW NE sec. 30-35n-3w. T.D. 1,918 ft.; stdg.; will not take acid.
R. C. Tarrant No. 1 Barkulo, C NW NW sec. 25-35n-4w. Drlg. 900 ft.
Consolidated Gas Co. No. 1 Hugi, NE NE NW sec. 14-35n-3w. T.D. 1,743 ft.; shot, no results; will acid.
Capitol Oil Co. No. 1 Pace, C SE SW sec. 27-36n-1w. T.D. 2,008 ft.; U.R. 5-in.
S. V. Day No. 3 Halter, NE NE NE sec. 17-35n-2w. T.D 1,626 ft.; contact 1,605 ft.; shot 25 qts.; acid. twice 500 gals. each.
Watson et al No. 2 Leach, SE NE NE sec. 31-35n-3w. S.D. 1,796 ft.

Bryant Bros. No. 1 Lashbaugh, NE SW NW sec. 34-25n-2w. T.D. 850 ft.; R.U. heavier mach. to resume.
Ogden-Kevin Oil Co. No. 7 Zachot, SE SW NW sec. 20-35n-1w. Drlg. 1,500 ft.

Outside Kevin-Sunburst

Model Oils, Inc., No. 1 Fey, NE SW sec. 5-37-3e. Drlg. 1,200 ft.

Yellowstone County

Western Dakota Oil Co. No. 1 Fox, CEL NW NE sec. 14-2n-23e. Cmtd. 12½-in. at 1,006 ft.
Broadview Dome Oil Co. No. 1, NE NE SW sec. 18-3n-23e. Cored 40 ft. of Frontier, est. 25 B.P.D. at around 1,400 ft.; D.D.

UTAH

Carbon County

Kelly Young No. 1, NE NE SE sec. 20-14s-10e. T.D. 1,080 ft.; S.G. through H.F.W.; U.R. 6⅝-in. for S.O.

Daggett County

Mountain Fuel Supply Co. No. 1 Lauzier, CNL NW NW section 27-3n-24e, Clay Basin gas field, was completed in the Dakota for 14,571,000 feet per day. It was drilled to 5,955 feet and found water in the Sundance. It plugged back to 5,796 feet, the base of the Dakota, and set the 6⅝-inch at 5,743 feet. Company is now building a gas line to connect with its trunk line into Salt Lake City.

Mountain Fuel Supply Co. No. 1 Smith, C SW NE sec. 30-3n-24e. M.I.M.

Grand County

Cane Creek Oil Co. is resuming on its test on the Cane Creek dome in its No. 2 Shaffer, following the interesting of Los Angeles parties in the deal through the sale of spreads. This test is only 150 feet north of No. 1 Shaffer, drilled in 1923 by Midwest Refining Co. and others, and which made as high as 600 bbls. per day with 5,000,000 feet of gas when rig was burned. After unusual difficulties, the well was continued to close to 5,000 feet, but upon plugging back was unable to recover the oil permanently, although it pumped better than 245 bbls. per day for a while. The structure is built up of immensely thick salt beds and several tests were drilled on the flanks without finding anything worth while. The theory of H. W. C. Prommel, who mapped the structure, is that the oil comes from some other source, probably to the northwest, through a fissure and that the Midwest well hit this fissure. The present test is believed to be located on the trend of the vein to the northwest. An unusual feature of the present situation is that oil appears to be seeping to the surface from the old hole, although it is supposed to have been plugged with 250 sacks of cement. This oil is higher in gravity at the surface than the oil found at 2,025 feet, pointing to its filteration through migration.

Utah Southern Oil Co. No. 1 Hyde, SE NW NW sec. 33-22s-22e. S.D. 6,715 ft.; M.I. heavier rot. equip.
Columbia Crude Corp. No. 1 Rath, NW SW SE sec. 12-25s-20e. Drlg. 2,334 ft.

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ALL STEEL
SPUDDER
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KEYSTONE DRILLER CO. BEAVER FALLS PENNA.

Cane Creek Oil Co. No. 1 Govt., NW SW sec. 31-26n-21e. Res. at 70 ft. (C.D.).

NEBRASKA

Sioux County

J. M. Huber Corp. and United Producers, Inc. No. 1 Morgan, C SW SW sec. 32-35n-56e. Drlg. 3,000 ft.

Dawes County

Stephens Oil Corp. No. 1 Palmer, C NW SW sec. 1-33n-50w. S.D. indef. 2,531 ft.

Keith County

Twentieth Century Oil Co. No. 1 Stuken, C NW NW sec. 21-14n-37w. S.D. 110 ft.; indef.

Lincoln County

Wilson M. Smith advises there has been no changes in the Smith and Wright operations which was reported under J. D. Cook and others.

Smith & Wright No. 1 Hansen, C SW NW sec. 24-15n-31w. T.D. 1,802 ft.; chg. to rot. tools.

Jefferson County

L. R. Page et al No. 1 Bonham, C SE SE sec. 1-1n-1e. R.U.

Eastern Fields

(Continued from Page 85)

completed a test on the Lucian Lester farm in Union district at 3,311 feet. Big lime was at 1,278-1,418 feet; Big Injun, 1,467-1,550 feet; Berea, 2,075-83 feet; Brown shale, 2,655-3,309 feet, with 472,000 feet of gas at 2,920-40 feet.

In Wirt County, Peter Silman drilled No. 3 on his own property in Clay district through the Injun sand to 971 feet and it was dry.

Oriskany Field

Two wells were completed in the Coopers Creek field in Kanawha County. In Elk district, Columbian Carbon Co. completed a test on the Rome C. Cavender farm as a gas well in the Oriskany sand, topped at 4,887 feet, and it gauged 2,150,000 feet. Total depth was 4,930 feet.

There were several new locations in Poca district, the most interesting that of Joe Rubin on the Carney heirs farm on Allen Fork of Left Fork, 3½ miles north, 27 degrees west of the gas well on the J. E. and M. D. Good farm. On Pocatalico River, 1 mile south, 80 degrees west of the Good well, United Fuel Gas Co. has a location, No. 4762, on the Mamie A. Ray farm. B. F. Andrea has made a location on the F. M. Ray farm 1.400 feet south of the Good well. Hays Oil & Gas Co. has made a location on the E. A. and J. E. Humphreys farm 1,300 feet south of No. 1 E. C. Humphreys. Columbia Carbon Co. has made a location on the Minne A. Boggess farm, a location north of the E. C. Humphreys farm.

In this district, Spartan Gas Co. topped the Corniferous lime at 4,912 feet in No. 2 Avilee Baldwin and is drilling at 4,960 feet. United Fuel Gas Co. is drilling at 4,965 feet in No. 4724 Kanawha Valley Bank; 3,900 feet in No. 4731 C. W. Shafer; 755 feet in No. 4757 C. C. Fisher; rigging up No. 4758 C. T. Tolley and No. 4759 Lizzie Sisson and others. Everett Starcher is drilling at 3,275 feet in No. 1 Greenbury Samuels. Brawley-Reed Gas Co. has reached 3,830 feet in No. 1 L. E. Campbell.

In Malden district, Godfrey L. Cabot, Inc., topped the Corniferous lime at 4,334 feet in No. 6 Nellie B. Tompkins. Owens Illinois Gas Co. is drilling at 4,915 feet in No. 11 L. A. Myers. Glenn Oil & Gas Co. is down 700 feet on the L. L. Williams farm.

In Elk district, Columbian Carbon Co. is drilling at 5,079 feet in No. 1 Mandy Wolfe. Cameron Oil & Gas Co. is down 1,525 feet on the Henry Hansel farm. Benedum & Trees are down 1,180 feet in the S. B. and L. D. Pauley test and 2,920 feet in No. 1 Cora Baxter. Pond Fork Oil & Gas Co. has reached 1,917 feet in No. 1 Crowder and Thomas.

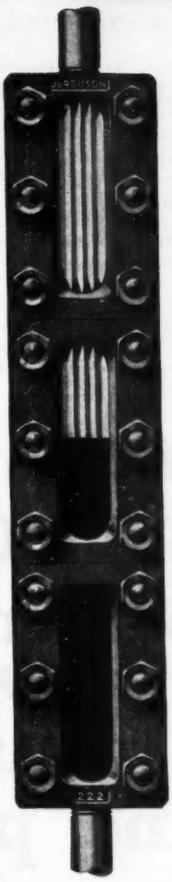
The test of Godfrey L. Cabot, Inc., and others on the Sarah Ann Null farm in Union district was shot and cleaned out with a total depth of 4,950 feet; it gauges 1,300,000 feet a day. In Poca district these operators are running casing ot 5,056 feet in the Holmes Morton and others test.

Outside Deep Tests

In Jackson County the tests of United Carbon Co. on the Elizabeth Ward Perkins farm in Washington district are drilling at 4,015 feet and 4,160 feet.

In Good County, Belmont Quadrangle Co. has reached 400 feet starting the test on the C. D. White farm in Steele district. In Wirt County, Carnegie Natural Gas Co. is fishing for the tools in the test on the W. O. Caplinger farm in Tucker district.

JERGUSON



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CALIFORNIA OIL FIELD OPERATIONS FOR JUNE, 1937

According to figures collected by the American Petroleum Institute, the total production of crude oil in California for June amounted to 19,913,888 bbls., an average of 663,796 bbls. per day. This is an increase of 6,845 bbls. per day over May production.

Total stocks of crude and all products in Pacific Coast territory decreased during the month 310,338 bbls. The total stocks at the end of the month were 124,719,911 bbls. The total stock decrease for 1937, up to June 30, was 6,623,825 bbls.

One hundred wells were completed during the month with an initial daily production of 47,057 bbls., compared with 119 wells completed during May with an initial production of 62,966 bbls.

CRUDE PETROLEUM PRODUCTION

(Figures of production and stocks are in barrels of 42 gallons)

Group No. 1—	Total production June	Daily average June, 1937	Daily average May, 1937	Daily average June, 1936
Belridge—North	463,551	15,452	15,144	8,859
Belridge—South	51,875	1,729	1,653	2,064
Coalinga	473,758	15,792	16,418	16,411
Edison	129,827	4,328	4,262	5,939
Elk Hills	324,123	10,804	11,116	8,473
Fruitvale	292,610	9,754	9,448	7,576
Greeley	32,314	1,077	861	.....
Kern River	459,631	15,321	15,899	13,375
Kettleman Middle dome	3,836	128	149	406
Kettleman North dome	2,422,270	80,742	81,036	77,765
Lost Hills	114,307	3,810	3,801	3,393
McKittrick	126,358	4,212	4,037	1,796
Midway-Sunset	2,255,848	75,195	75,130	60,531
Mountain View	566,588	18,886	19,282	27,945
Mount Poso	507,309	16,910	16,272	17,253
Round Mountain	365,875	12,196	11,470	10,618
Ten Section	82,065	2,736	2,509	775
Wheeler Ridge	9,906	330	334	350
Group No. 2—				
Capitan	73,089	2,436	2,433	1,428
Elwood	276,464	9,215	9,161	12,228
Rincon	78,354	2,612	2,755	2,071
San Miguelito	93,796	3,127	3,151	1,391
Santa Barbara	19,603	653	743	1,547
Santa Maria	349,132	11,638	10,460	4,464
Summerland	991	33	37	37
Ventura Avenue	1,040,912	34,697	35,094	33,636
Ventura-Newhall	156,895	5,230	4,992	4,716
Watsonville	1,800	60	60	60
Group No. 3—				
Brea-Olinda	258,316	8,611	8,723	7,970
Coyote—East	114,132	3,804	4,141	2,286
Coyote—West	243,324	8,111	8,795	8,278
Dominguez	760,562	25,352	24,687	25,983
El Segundo	179,038	5,968	5,569	394
Huntington Beach	1,127,894	37,596	36,939	36,173
Inglewood	477,261	15,909	16,049	12,102
Lawndale	2,445	82	86	97
Long Beach	1,832,697	61,090	60,523	68,025
Los Angeles-Salt Lake	22,264	742	787	839
Montebello	268,064	8,935	9,377	9,837
Playa Del Rey	261,068	8,702	9,283	13,613
Potrero	8,831	294	314	339
Richfield	270,504	9,017	8,273	6,160
Rosecrans	91,694	3,056	2,951	2,039
Santa Fe Springs	1,343,005	44,767	44,531	44,065
Seal Beach	280,765	9,359	9,709	9,216
Torrance	241,442	8,048	7,849	7,992
Whittier	27,537	918	917	994
Wilmington	1,329,958	44,332	39,741	.....
Total June	19,913,888	663,796	656,951	581,509
Total May	20,365,478	656,951	.....	.....
Increase	*451,590	6,845	.....	.....

*Decrease.

OIL FIELD DEVELOPMENT

Group No. 1—	New rigs up	Active drilling	Producers completed	Daily initial output	Active producing	Abd. wells Drillers	Abd. wells Producers
Belridge—North	1	6	1	2,223	48	..	..
Belridge—South	1	1	..	.....	139	..	..
Coalinga	2	1	..	.....	894	..	..
Edison	2	6	2	310	92	..	..
Elk Hills	1	1	1	205	158	..	..
Fruitvale	3	8	3	888	147	1	..
Greeley	..	4	1	327	3	..	..
Kern River	7	11	3	557	1,347	..	..
Kettleman Middle dome	..	..	..	.....	3	..	..
Kettleman North dome	1	11	2	3,165	155	..	..
Lost Hills	2	1	1	128	256	..	..
McKittrick	1	1	1	210	183	..	..
Midway-Sunset	5	14	11	3,792	2,408	2	1
Mountain View	3	9	3	1,584	186	..	..
Mount Poso	5	6	6	1,213	257	2	..
Round Mountain	5	5	5	2,293	131	1	..
Ten Section	1	3	..	.....	4	..	..
Wheeler Ridge	..	..	..	.....	27	..	..
Group No. 2—							
Capitan	2	1	2	1,112	30	..	..
Elwood	..	..	..	.....	81	..	..
Rincon	..	3	..	.....	33	..	..
San Miguelito	..	2	..	.....	12	..	..
Santa Barbara	..	1	..	.....	45	..	..
Santa Maria	7	13	3	3,323	234	1	2
Summerland	..	1	..	.....	19	..	..
Ventura Avenue	1	7	1	128	231	..	..
Ventura-Newhall	4	19	2	533	565	1	..
Watsonville	..	..	..	.....	7	..	..
Group No. 3—							
Brea-Olinda	..	1	..	.....	368	..	..
Coyote—East	..	4	1	200	80	1	..
Coyote—West	..	..	..	.....	53	..	..
Dominguez	..	6	..	.....	132	..	1
El Segundo	..	5	3	2,872	21	1	..
Huntington Beach	1	3	5	521	569	..	..
Inglewood	..	1	..	.....	213	..	..
Lawndale	..	..	..	.....	6	..	..
Long Beach	1	6	1	212	1,247	..	2
Los Angeles-Salt Lake	..	..	..	.....	120	..	..
Montebello	..	3	1	651	209	..	..
Newport	..	1	..	.....	.....	..	..
Playa Del Rey	..	1	..	.....	208	2	1
Potrero	..	..	..	.....	11	..	..
Richfield	..	7	2	79	273	..	..
Rosecrans	..	6	..	.....	78	..	..
Santa Fe Springs	1	3	..	.....	659	..	..
Seal Beach	..	1	1	33	114	..	..
Torrance	..	5	1	98	536	1	..
Whittier	..	..	..	.....	155	..	..
Wilmington	50	50	36	20,400	151	..	..
Miscellaneous drilling	11	62	..	.....	.....	3	..
Group No. 4—gas fields—							
Buena Vista Lake	..	..	..	.....	5	..	..
McDonald Island	..	..	..	.....	4	..	..
Rio Vista	1	1	1	Gas	1	..	..
Total June	119	301	100	47,057	12,908	16	7
Total May	165	299	119	62,966	12,792	24	16
Decrease	46	*2	19	15,909	*116	8	9

*Increase.

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McCord Force Feed Lubricators

Standard of the Oil Fields

1. Make possible greater production at less cost.

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McCORD RADIATOR & MFG. CO.
Lubricator Division
DETROIT, MICH.

Summary of Operations, All Fields for July

SUMMARY OF ALL FIELDS

Wells Completed

	Comp.	Prod.	Dry	Gas
Penna Grade Fields	638	1,331	46	96
Central Ohio	118	735	31	57
Lima	6	855	0	3
Illinois	17	4,986	2	0
Indiana	15	115	2	6
Kentucky	81	1,519	24	14
Michigan	87	35,105	24	4
Kansas	297	177,987	68	16
Oklahoma	273	86,539	66	0
North Cent. Texas	254	24,311	110	5
West Texas	321	212,815	41	1
Texas Panhandle	80	30,050	1	17
East Cent. Texas	73	18,551	9	5
East Texas	254	10,853	11	0
East Texas border	24	7,288	3	1
Gulf Coast Texas	135	60,249	24	4
Southwest Texas	253	26,335	75	7
North Louisiana	85	22,154	16	19
Gulf Coast Louisiana	35	9,808	13	1
Arkansas	18	5,097	10	0
Montana	29	1,342	8	2
Wyoming	12	1,055	6	1
Colorado	1	0	1	0
New Mexico	62	43,632	11	2
Total July	3,168	782,712	602	265
Total June	2,837	779,715	556	208
Difference	331	3,097	46	57

Rigs and Wells Drilling

	Rigs	Drlg.	Total
Penna. Grade Fields	81	672	753
Central Ohio	55	123	178
Lima	0	27	27
Illinois	7	58	65
Indiana	0	20	20
Kentucky	8	64	72
Michigan	69	170	239
Kansas	88	376	464
Oklahoma	57	411	468
North Cent. Texas	49	225	274
West Texas	102	442	544
Texas Panhandle	56	188	244
East Cent. Texas	17	83	100
East Texas	84	119	203
East Texas border	6	40	46
Gulf Coast Texas	30	146	176
Southwest Texas	77	240	317
North Louisiana	29	111	140
Gulf Coast Louisiana	13	107	120
Arkansas	7	52	59
Mississippi	6	12	18
Alabama	1	2	3
Florida	2	4	6
Montana	5	67	72
Wyoming	8	71	79
Colorado	2	44	46
New Mexico	43	166	209
Utah	0	9	9
Nebraska	0	7	7
Total July	902	4,056	4,958
Total June	858	3,952	4,810
Difference	44	104	148

KANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Dlg.	Ttl.
Barber	3	771	0	0	5	5
Barton	25	18,896	3	7	30	37
Butler	8	289	5	3	12	15
Chase	0	0	0	0	1	1
Chautauqua	12	341	5	3	8	11
Coffey	1	20	0	0	2	2
Cowley	7	5,613	5	4	19	23
Elk	6	260	3	1	5	6
Ellis	25	26,220	1	17	47	64
Ellsworth	5	4,310	2	0	6	6
Grant	2	0	0	1	4	5
Greenwood	9	633	2	0	18	18
Hamilton	0	0	0	0	1	1
Harper	0	0	0	0	1	1
Harvey	3	2,634	0	0	5	5
Haskell	0	0	0	0	1	1
Kearny	0	0	0	0	1	1
Kiowa	0	0	0	0	1	1
Lyon	0	0	0	0	1	1
Marion	0	0	0	2	2	4
McPherson	12	2,777	3	5	9	14
Meade	0	0	0	1	0	1
Mitchell	0	0	0	0	1	1
Ness	0	0	0	1	2	3
Osborne	0	0	0	0	1	1
Pawnee	1	0	1	0	0	0
Pratt	0	0	0	0	1	1
Reno	18	9,361	0	3	21	24
Rice	51	29,925	12	9	47	56
Rooks	5	624	4	1	8	9
Rush	7	917	2	3	8	11
Russell	59	64,873	4	24	63	87
Scott	1	0	1	0	1	1
Sedgwick	3	1,349	1	0	6	6
Seward	1	0	0	0	1	1
Stafford	9	5,374	4	1	12	13
Stevens	3	0	0	0	5	5
Sumner	8	2,190	3	2	6	8
Trego	1	400	0	0	4	4
Woodson	12	210	1	0	10	10
Ttl. July	297	177,987	68	88	376	464
Ttl. June	246	158,096	68	62	402	464
Difference	51	19,891	0	26	26	0

Gas well completions: Barton, 1; Barber, 2; Chautauqua, 4; Grant, 2; Reno, 1; Rush, 2; Seward, 1; Stevens, 3.

OKLAHOMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Dlg.	Ttl.
Adair	0	0	0	0	1	1
Alfalfa	1	0	1	0	0	0
Atoka	1	0	1	0	0	0
Beckham	0	0	0	1	2	3
Caddo	1	100	0	2	7	9
Carter	14	373	3	0	23	23
Cleveland	3	3,796	0	0	9	9
Coal	1	5	0	1	1	2
Comanche	2	0	1	1	5	6
Cotton	2	15	1	0	6	6
Creek	12	389	6	5	46	51
Garfield	1	0	1	0	0	0
Garvin	5	217	2	1	9	10
Grady	2	0	2	0	4	4
Grant	0	0	0	0	3	3
Haskell	0	0	0	0	1	1
Hughes	8	975	2	1	15	16
Jackson	1	20	0	0	3	3
Jefferson	8	510	0	1	7	8
Johnston	0	0	0	0	1	1
Kay	4	221	1	0	4	4
Kiowa	1	0	1	0	2	2
Latimer	0	0	0	0	1	1
Lincoln	11	4,060	1	1	9	10
Logan	6	12,147	0	3	6	9
Love	0	0	0	0	2	2
Marshall	1	15	0	0	2	2
McCurtain	0	0	0	0	1	1
Murray	0	0	0	0	2	2
Muskogee	3	65	0	3	7	10
Noble	8	4,002	1	2	10	12
Okfuskee	15	718	6	3	8	11
Oklahoma	13	16,271	1	1	9	10
Okmulgee	10	136	4	7	33	40
Osage	31	1,396	12	3	36	39
Pawnee	2	4	0	0	1	1
Pontotoc	53	31,869	6	7	63	70
Pottawatomie	2	345	0	2	16	18
Pushmataha	0	0	0	0	1	1
Seminole	31	8,248	6	4	30	34
Stephens	8	475	3	4	10	14
Tillman	0	0	0	0	3	3
Tulsa	10	164	3	3	8	11
Wagoner	2	3	1	1	3	4
Washita	0	0	0	0	1	1
Ttl. July	273	86,539	66	57	411	468
Ttl. June	266	93,374	70	64	454	518
Difference	7	6,835	4	7	43	50

SOUTHWEST TEXAS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Agua Dulce	0	0	0	1	5	6
Alta Mesa	1	105	0	0	3	3
Alta Verde	2	15	1	1	2	3
Armagosa	1	0	0	0	0	0
Barbacoas	0	0	0	1	1	2
Bateman	1	0	1	0	0	0
Bent'nville	2	0	1	0	0	0
Branyon	16	980	0	8	17	25
Bruni	9	10	8	0	1	1
Buchanan	4	870	0	1	2	3
Byersville	1	15	0	0	0	0
Chapman Ranch	1	0	1	0	0	0
Charamousca	2	180	0	1	0	1
Colmena	5	460	0	1	2	3
Darst Ck. Extn.	9	2,950	1	3	4	7
Driscoll	1	145	0	0	0	0
Dunlap	1	55	0	3	4	7
El Tanque	3	345	0	0	1	1
Escobas	10	245	3	1	3	4
Ezzell	0	0	0	0	2	2
Flour Bluff	10	1,455	0	2	4	6
Govt. Wells	5	765	0	1	1	2
Haynes	0	0	0	0	1	1
Hoffman	5	225	0	1	1	2
Hords Ck.	1	0	1	0	0	0
Jacob	4	100	1	1	1	2
Killam	7	490	2	0	2	2
Kingsville	0	0	0	1	2	3
Labbe	3	740	0	0	2	2
La Blanca	0	0	0	0	2	2
Larremore	1	130	0	1	0	1
La Sal Vieja	0	0	0	0	1	1
Loma Alta	0	0	0	1	0	1
Loma Novia	5	610	0	0	0	0
Lopez	4	1,370	1	2	0	2
Los Olmos	0	0	0	1	1	2
Luby	1	155	0	0	1	1
Luling	5	1,010	0	1	3	4
Lundell	2	120	1	0	1	1
Lytton Spgs.	1	0	1	0	1	1
Manford	1	0	1	1	1	2
McCampbell	7	1,375	0	2	11	13
Midway	0	0	0	1	2	3
Nolte	1	0	1	0	0	0
North Dale	0	0	0	0	2	2
N. Pettus	0	0	0	0	1	1
N. Sweden	13	2,580	0	1	12	13
Oakville	1	10	0	0	0	0
O'Hern	6	1,730	4	0	3	3
Palangana	0	0	0	0	1	1
Pearsall	1	40	0	0	2	2
Piedra Lumbre	3	275	0	0	1	1
Plummer	1	0	1	0	2	2
Plymouth	0	0	0	0	4	4
Randado	1	0	1	0	0	0
Ricaby	2	0	2	1	2	3
Rio Grande City	1	0	1	0	0	0
Roma	0	0	0	0	1	1
Salt Flats	0	0	0	1	4	5
Samfordyce	3	660	1	2	0	2
Sandia	1	0	1	1	0	1
Sarnosa	1	25	0	1	0	1
Saxet	30	3,945	2	5	37	42
Saxet Hgts.	6	840	0	1	3	4
Seven Sisters	5	775	1	0	3	3
Slick	1	0	1	0	1	1
So. Callham	0	0	0	0	1	1
Stratton	0	0	0	0	1	1
Strauch	1	0	1	0	0	0
Sweden	1	50	0	1	1	2
Taft	1	225	0	0	0	0
Thomas-Lockhart	1	0	1	0	1	1
Taylor	0	0	0	1	0	1
Von Ormy	3	10	0	0	1	1
W. Premont	3	110	1	1	2	3
W. Tuleta	1	25	0	0	1	1
White Point	1	0	1	0	0	0
Yoast	1	20	0	0	0	0
Zoboroski	1	95	0	3	2	5
Miscl.	31	0	31	21	66	87
Ttl. July	253	26,335	75	77	240	317
Ttl. June	242	19,035	77	82	208	290
Difference	11	7,300	2	5	32	27

Gas wells completed: Armagosa 1, Bentonville 1, Colmena 2, El Tanque 1, Flour Bluff 1, Saxet 1, total 7.

WEST CENTRAL AND NORTH TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Archer	32	1,396	20	4	11	15
Baylor	1	5	0	0	0	0
Brown	5	25	3	1	5	6
Callahan	5	21	4	1	5	6
Clay	6	55	4	0	5	5
Coleman	1	150	0	1	3	4
Collin	0	0	0	0	2	2
Comanche	0	0	0	0	1	1
Cooke	13	630	6	3	13	16
Denton	3	0	3	1	7	8
Eastland	4	58	1	0	6	6
Erath	0	0	0	0	1	1
Foard	1	750	0	0	1	1
Grayson	2	0	2	0	4	4
Hardeman	0	0	0	0	1	1
Haskell	2	0	2	0	1	1
Jack	37	7,003	4	12	50	62
Knox	1	0	1	0	0	0
McCulloch	0	0	0	0	1	1
Montague	16	1,217	2	1	8	9
Palo Pinto	0	0	0	0	3	3
Shackelford	22	1,152	9	0	15	15
Stephens	0	0	0	1	8	9
Tarrant	0	0	0	0	1	1
Throckmorton	1	0	0	0	2	2
Wichita	37	2,512	15	11	24	35
Wilbarger	16	3,916	7	5	17	22
Wise	0	0	0	0	1	1
Young	49	5,421	27	8	29	37
Ttl. July	254	24,311	110	49	225	274
Ttl. June	265	27,531	113	42	237	279
Difference	11	3,220	3	7	12	5

Gas wells: Brown 1, Jack 2, Shackelford 1, Throckmorton 1, total 5.

WEST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Andrews	5	3,341	1	4	13	17
Bailey	0	0	0	0	2	2
Brewster	0	0	0	0	3	3
Cochran	0	0	0	1	3	4
Coke	0	0	0	0	2	2
Crane	18	14,632	0	2	21	23
Crockett	0	0	0	1	4	5
Dawson	0	0	0	0	2	2
Ector	78	64,387	3	30	89	119
Edwards	1	0	1	0	2	2
El Paso	0	0	0	0	1	1
Fisher	2	258	0	1	6	7
Gaines	2	503	1	0	12	12
Garza	2	0	2	0	0	0
Glasscock	2	467	0	0	5	5
Hockley	0	0	0	1	2	3
Howard	11	6,374	1	7	24	31
Hudspeth	0	0	0	0	1	1
Jeff Davis	0	0	0	0	1	1
Jones	40	15,484	8	5	35	40
Loving	2	0	2	3	5	8
Menard	1	0	1	0	0	0
Mitchell	1	0	1	1	2	3
Pecos	19	3,721	10	7	34	41
Presidio	0	0	0	0	2	2
Reagan	0	0	0	1	1	2
Reeves	0	0	0	0	2	2
Runnels	0	0	0	0	3	3
Schleicher	0	0	0	0	2	2
Scurry	1	0	1	1	1	2
Stonewall	0	0	0	0	1	1
Taylor	0	0	0	0	1	1
Terry	0	0	0	0	3	3
Upton	30	14,110	4	9	38	47
Ward	47	36,126	3	15	52	67
Winkler	58	53,412	1	13	60	73
Yoaqum	1	0	1	0	7	7
Total July	321	212,815	41	102	442	544
Total June	247	186,426	19	119	471	590
Difference	74	26,389	22	17	29	46

Gas wells: Winkler 1.

EAST TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Anderson	9	509	0	3	8	11
Angelina	1	0	1	0	3	3
Bowie	0	0	0	0	1	1
Cherokee	1	25	0	1	1	2
Ellis	0	0	0	0	1	1
Fannin	0	0	0	0	3	3
Franklin	8	3,136	0	0	6	6
Freestone	2	0	2	1	4	5
Gregg	128	5,753	7	49	46	95
Henderson	6	649	1	5	6	11
Hill	1	5	0	0	1	1
Hopkins	7	2,677	2	1	5	6
Houston	1	0	0	0	0	0
Hunt	0	0	0	0	2	2
Kaufman	0	0	0	0	1	1
Lamar	0	0	0	0	3	3
Limestone	0	0	0	0	3	3
Nacogdoches	0	0	0	0	1	1
Red River	0	0	0	0	3	3
Navarro	0	0	0	0	2	2
Rusk	77	3,413	4	20	48	68
Smith	17	516	0	6	6	12
Titus	43	11,511	2	4	25	29
Upshur	31	1,146	0	8	18	26
Van Zandt	2	64	1	3	5	8
Ttl. July	334	29,404	20	101	202	303
Ttl. June	250	22,665	13	93	196	289
Difference	84	6,739	7	8	6	14

Gas wells: Anderson 3, Henderson 1, Houston 1, total 5.

TEXAS PANHANDLE

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Briscoe	0	0	0	1	1	2
Carson	10	2,757	0	4	16	20
Collingsworth	0	0	0	0	2	2
Dallam	0	0	0	0	1	1
Deaf Smith	0	0	0	0	1	1
Dickens	0	0	0	0	1	1
Gray	28	13,039	0	23	57	80
Hansford	0	0	0	1	0	1
Hutchinson	26	13,125	0	19	77	96
Moore	13	0	0	6	26	32
Ochiltree	0	0	0	0	1	1
Roberts	0	0	0	1	1	2
Wheeler	3	1,129	1	1	4	5
Total July	80	30,050	1	56	188	244
Total June	67	29,933	0	51	191	242
Difference	13	1,017	1	5	3	2

Gas wells: Carson 3, Moore 13, Wheeler 1: total, 17.

EAST TEXAS (Border Counties)

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Drlg.	Ttl.
Bowie	0	0	0	0	3	3
Cass—Rodessa	14	4,431	1	4	12	16
Harrison	2	24	0	0	3	3
Marion—Rodessa	5	2,818	0	2	7	9
Marion—Other	1	0	1	0	7	7
Panola	2	15	1	0	5	5
Shelby	0	0	0	0	3	3
Total July	24	7,288	3	6	40	46
Total June	31	9,503	3	2	43	45
Difference	7	2,215	0	4	3	1

Gas well: 1, Marion County (Rodessa), 5,000,000 ft.

GULF COAST

Texas

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Rgs.	Dlg.	Ttl.
Amelia	18	8,680	2	3	9	12
Anahuac	5	2,086	1	2	2	4
Bay City	1	470	0	0	1	1
Barbers Hill	0	0	0	0	2	2
Batson	1	0	1	0	0	0
Big Hill	0	0	0	0	3	3
Big Creek	1	169	0	0	1	1
Boling	0	0	0	0	1	1
Buckeye	0	0	0	0	1	1
Clay Creek	2	77	1	0	1	1
Cleveland	1	450	0	0	1	1
Cotton Lake	2	767	0	1	0	1
Dickinson	5	2,434	0	2	5	7
Fairbanks	0	0	0	0	1	1
Fannett	0	0	0	0	1	1
Five Corners	1	360	0	0	0	0
Friendswood	1	650	0	0	1	1
Ganado	0	0	0	1	0	1
Greta	1	1,920	0	0	2	2
Goose Creek	0	0	0	0	1	1
Hardin	0	0	0	0	2	2
Hankamer	0	0	0	0	1	1
Hastings	29	16,136	1	4	24	28
Hawkinsville	0	0	0	0	1	1
Heyser	3	528	0	2	5	7
High Isl'nd.	0	0	0	0	3	3
Hull	2	744	1	0	3	3
Humble	2	270	0	0	0	0
Keeran	0	0	0	0	1	1
Labelle	0	0	0	0	1	1
Lockridge	1	123	0	1	6	7
Magnet	2	240	0	1	2	3
Manvel	2	621	0	0	2	2
Louise	1	504	0	0	0	0
McFaddin	1	0	0	1	0	1
Markham	0	0	0	0	1	1
Nome	3	782	1	1	2	3
North Creek	0	0	0	0	1	1
Old Ocean	0	0	0	0	2	2
Orchard	1	429	0	1	1	2
Palacios	1	0	1	0	4	4
Pickett Ridge	0	0	0	0	1	1
Pierce Jctn.	1	240	0	0	1	1
Placedo	7	942	1	1	6	7
Port Neches	0	0	0	1	0	1
Refugio	4	3,850	1	0	2	2
Sandy Point	0	0	0	0	1	1
Silsbee	3	515	0	0	4	4
Seabreeze	0	0	0	0	2	2
Segno	4	253	3	1	3	4
Stratton Rg.	0	0	0	0	1	1
S. Houston	3	464	1	0	2	2
Spindletop	1	330	0	0	2	2
Spurger	1	495	0	0	1	1
Sugarland	1	0	1	0	0	0
Teifener	0	0	0	0	1	1
Thompson	1	75	0	0	0	0
Tomball	6	2,629	0	0	3	3

Turtle Bay	2	0	1	0	2	2
Quintana-Oconnor	6	11,700	0	2	4	6
Van Vleck	0	0	0	0	1	1
West Columbia	0	0	0	0	2	2
Withers	1	316	0	0	2	2
Miscl.	7	0	7	5	10	15
Ttl. July	135	60,249	24	30	146	176
Ttl. June	167	67,888	23	41	129	170
Difference	32	7,637	1	11	17	6

Gas wells completed: Magnet 1, McFaddin 1, Silsbee 1, Turtle Bay 1, total 4.

Louisiana

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Abbeville	0	0	0	0	1	1
Bayou Blue	0	0	0	0	1	1
Bayou Bouillon	0	0	0	0	1	1
Bay St. Elaine	0	0	0	0	2	2
Bayou Cocotriz	0	0	0	0	2	2
Big Lake	0	0	0	0	2	2
Black Bayou	0	0	0	0	1	1
Caillou Isld.	0	0	0	0	1	1
Cameron Meadows	1	100	0	0	1	1
Charenton	2	370	1	0	3	3
Choctaw	0	0	0	0	2	2
Darrow	0	0	0	0	1	1
Dog Lake	0	0	0	0	1	1
Fausse Pnt.	0	0	0	0	1	1
Four Isle	0	0	0	0	1	1
Gillis	5	1,096	0	1	3	4
Garden Isld.	0	0	0	0	1	1
Gueydan	0	0	0	0	1	1
Hackberry	5	1,779	2	2	11	13
Iowa	2	976	0	0	1	1
Jeanerette	1	0	1	0	2	2
Jennings	6	2,833	1	2	15	17
Lafitte	1	1,450	0	0	3	3
Lake Hermitage	0	0	0	0	1	1
Lake Long	1	425	0	1	0	1
Lake Pelto	0	0	0	0	1	1
Laritte	0	0	0	0	1	1
Leesville	1	108	0	0	2	2
New Iberia	0	0	0	2	6	8
Roanoke	0	0	0	0	1	1
Sorrento	1	0	1	0	0	0
S. Roanoke	0	0	0	0	1	1
Starks	0	0	0	0	1	1
St. Martinsville	2	0	2	0	1	1
Sulphur	1	21	0	0	2	2
Tepetate	1	0	1	0	2	2
Valentine	1	650	0	1	3	4
Vinton	0	0	0	0	2	2
Miscl.	4	0	4	4	25	29
Ttl. July	35	9,808	13	13	107	120
Ttl. June	43	12,309	20	21	91	112
Difference	8	2,501	7	8	16	8

Gas wells completed: Gillis 1.

ARKANSAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Drlg.	Ttl.
Ashley	0	0	0	0	1	1
Calhoun	1	0	1	1	0	1
Cleveland	1	0	1	0	1	1
Clark	0	0	0	0	3	3
Columbia	0	0	0	0	2	2
Critterton	0	0	0	0	1	1
Hempstead	0	0	0	0	3	3
Howard	1	0	1	0	0	0
Lafayette	0	0	0	0	1	1
Little River	1	0	1	0	0	0
Lonoke	0	0	0	0	3	3
Miller	2	0	2	2	11	13
Monroe	0	0	0	0	1	1
Nevada	3	35	1	4	2	6
Ouachita	0	0	0	0	2	2
Paluski	0	0	0	0	1	1
Pike	0	0	0	0	2	2
Saline	0	0	0	0	1	1
St. Francis	0	0	0	0	1	1
Union	9	5,062	3	0	16	16
Total July	18	5,097	10	7	52	59
Total June	15	3,561	10	18	44	62
Difference	3	1,536	0	11	8	3

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry	Rigs	Drlg.	Ttl.
Bienville	1	0	1	1	3	4
Bossier	6	8	3	0	5	5
Caddo—Rodessa	14	5,363	1	1	15	16
Caddo—Other	12	864	3	2	21	23
Claiborne	17	11,804	0	7	14	21
Concordia	0	0	0	0	1	1
De Soto	2	190	1	0	8	8
Franklin	0	0	0	0	1	1
Grant	5	107	3	0	0	0
Jackson	0	0	0	0	1	1
LaSalle	1	0	1	2	0	2
Lincoln	3	1,368	1	3	7	10
Morehouse	5	0	0	3	5	8
Natchitoches	1	0	1	0	1	1
Ouachita	3	0	0	3	4	7
Red River	3	0	0	0	4	4
Sabine	3	70	0	3	4	7
Tensas	1	0	1	0	1	1
Union	5	0	0	2	6	8
Webster	3	2,380	0	2	9	11
Winn	0	0	0	0	1	1
Total July	85	22,154	16	29	111	140
Total June	66	19,358	8	37	121	158
Difference	19	2,796	8	8	10	18

Gas wells: 2, Bossier Parish, 44,000,000 ft.; 1, Caddo-Rodessa, 10,000,000 ft.; 5, Morehouse, 35,000,000 ft.; 3, Ouachita, 6,000,000 ft.; 3, Red River; 5, Union, 51,000,000 ft.; total, 19.

MISSISSIPPI

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Drlg.	Ttl.
Bolivar	0	0	0	1	1	2
Sunflower	0	0	0	1	0	1
Wilkinson	0	0	0	0	2	2
Washington	0	0	0	0	1	1
Simpson	0	0	0	1	0	1
Claiborne	0	0	0	0	1	1
Jones	0	0	0	0	1	1
George	0	0	0	0	1	1
Grenada	0	0	0	1	0	1
Lamar	0	0	0	0	2	2
Harrison	0	0	0	0	1	1
Yalobusha	0	0	0	1	0	1
Kemper	0	0	0	1	0	1
Pike	0	0	0	0	1	1
Madison	0	0	0	0	1	1
Total July	0	0	0	6	12	18
Total June	1	0	1	6	12	18
Difference	1	0	1	0	0	0

ALABAMA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Drlg.	Ttl.
Choctaw	0	0	0	0	1	1
Green	0	0	0	1	0	1
Houston	0	0	0	0	1	1
Total July	0	0	0	1	2	3
Total June	0	0	0	1	2	3
Difference	0	0	0	0	0	0

FLORIDA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Drlg.	Ttl.
Kay	0	0	0	1	0	1
Lake	0	0	0	0	2	2
Nassau	0	0	0	0	1	1
Polk	0	0	0	1	0	1
Hillsborough	0	0	0	0	1	1
Total July	0	0	0	2	4	6
Total June	0	0	0	2	4	6
Difference	0	0	0	0	0	0

OHIO FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Ashland	3	0	1	1	4	5
Ashtabula	0	0	0	0	0	0
Athens	10	18	3	3	8	11
Belmont	2	0	0	3	3	6
Coshocton	1	134	0	3	2	5
Cuyahoga	1	0	0	0	2	2
Delaware	1	0	1	0	0	0
Fairfield	1	0	0	0	1	1
Guernsey	7	0	2	1	9	10
Gallia	0	0	0	0	0	0
Huron	7	0	0	0	3	3
Holmes	0	0	0	2	3	5
Hocking	4	28	0	2	2	4
Jefferson	0	0	0	0	0	0
Knox	6	85	2	3	8	11
Lawrence	1	0	0	1	0	1
Licking	10	24	2	1	12	13
Lorain	3	0	0	4	5	9
Medina	0	0	0	1	1	2
Meigs	10	0	3	7	8	15
Morgan	6	5	1	1	1	2
Monroe	4	1	0	1	7	8
Muskingum	4	175	2	1	3	4
Noble	1	0	1	1	10	11
Perry	7	230	3	5	4	9
Portage	0	0	0	0	0	0
Richland	0	0	0	0	0	0
Stark	1	0	0	1	6	7
Summit	3	0	1	2	3	5
Tuscarawas	1	0	0	2	7	9
Wayne	1	0	0	0	1	1
Washington	22	35	9	9	10	19
Vinton	1	0	0	0	0	0
Ttl. July	118	735	31	55	123	178
Ttl. June	94	576	24	46	169	215
Difference	24	159	7	9	46	37

Gas wells: Ashland 2, Athens 4, Belmont 2, Cuyahoga 1, Fairfield 1, Guernsey 5, Huron 7, Hocking 2, Knox 1, Lawrence 1, Licking 3, Lorain 3, Meigs 7, Morgan 3, Monroe 3, Perry 2, Stark 1, Summit 2, Tuscarawas 1, Wayne 1, Washington 4, Vinton 1, total 57.

ROCKY MOUNTAIN AREA

Colorado

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Adams	0	0	0	0	2	2
Archuleta	1	0	1	0	5	5
Bent	0	0	0	0	1	1
Boulder	0	0	0	0	2	2
La Plata	0	0	0	0	3	3
Larimer	0	0	0	0	3	3
Las Animas	0	0	0	0	2	2
Moffat	0	0	0	1	6	7
Park	0	0	0	0	3	3
Rio Blanco	0	0	0	1	1	2
Miscellaneous	0	0	0	0	16	16
Ttl. July	1	0	1	2	44	46
Ttl. June	0	0	0	4	42	46
Difference	1	0	1	2	2	0

Gas wells: None.

Wyoming

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Albany	0	0	0	0	4	4
Big Horn	2	374	1	0	8	8
Carbon	1	0	0	0	9	9
Converse	0	0	0	2	4	6
Fremont	0	0	0	0	5	5
Lincoln	0	0	0	0	4	4
Natrona	1	20	0	0	5	5
Niobrara	1	0	1	2	12	14
Park	2	660	0	1	3	4
Sweetwater	0	0	0	2	1	3
Uinta	0	0	0	0	3	3
Washakie	0	0	0	0	4	4
Weston	5	1	4	1	5	6
Miscellaneous	0	0	0	0	4	4
Ttl. July	12	1,055	6	8	71	79
Ttl. June	6	2,807	0	10	70	80
Difference	6	752	6	2	1	1

Gas well: Carbon 1.

New Mexico

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Lea	52	43,447	5	38	108	146
Roosevelt	1	0	1	0	1	1
Eddy	5	135	1	3	32	35
Chaves	0	0	0	0	1	1
Dona Ana	0	0	0	0	1	1
Otero	0	0	0	0	2	2
Curry	0	0	0	0	1	1
Bernalillo	0	0	0	0	1	1
McKinley	2	0	2	0	4	4
Santa Fe	0	0	0	0	2	2
San Juan	2	50	1	1	5	6
San Miguel	0	0	0	0	3	3
Socorro	0	0	0	0	1	1
Valencia	0	0	0	1	2	3
Quay	0	0	0	0	1	1
Torrance	0	0	0	1	0	1
Ttl. July	62	43,632	11	43	166	209
Ttl. June	74	65,760	7	11	153	164
Difference	12	22,128	4	32	13	45

Gas wells completed: Lea County, 2.

Montana

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Big Horn	0	0	0	0	2	2
Carbon	0	0	0	0	5	5
Fergus	0	0	0	0	5	5
Glacier	8	565	1	4	15	19
Petroleum	0	0	0	0	3	3
Phillips	1	0	1	0	2	2
Pondera	0	0	0	1	1	2
Toole	20	777	6	0	22	22
Yellowstone	0	0	0	0	2	2
Miscellaneous	0	0	0	0	10	10
Ttl. July	29	1,342	8	5	67	72
Ttl. June	26	2,461	7	5	66	71
Difference	3	1,119	1	0	1	1

Gas wells: Glacier 2.

Utah

Summary of Field Operations

	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Ttl. July	0	0	0	0	9	9
Ttl. June	1	0	1	0	9	9
Difference	1	0	1	0	0	0

Nebraska

Summary of Field Operations

	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Ttl. July	0	0	0	0	7	7
Ttl. June	0	0	0	0	7	7
Difference	0	0	0	0	0	0

PENNSYLVANIA GRADE FIELDS

Summary of Field Operations

Field—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Bradford	249	265	0	8	212	220
Allegany	134	82	0	4	101	105
N.Y.-Penna. Gas	4	0	3	3	28	31
Venango-Clarion	45	53	0	2	21	23
Butler-Armstrong	13	27	2	1	10	11
S.W. Penna.	24	93	3	11	47	58
S.E. Ohio	56	692	17	16	60	76
W. Virginia	113	119	21	36	193	229
Total July	638	1,331	46	81	672	753
Total June	516	927	32	99	451	550
Difference	122	404	14	18	221	203

Gas wells completed: N.Y.-Pa. gas field, 1; Venango-Clarion, 1; Butler-Armstrong, 4; S.W. Penna., 10; S.E. Ohio, 12; W. Va., 68; total 96.

MICHIGAN

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Dig.	Ttl.
Alcona	0	0	0	1	0	1
Allegan	9	2,800	3	5	10	15
Arenac	11	3,665	2	5	17	22
Alpena	0	0	0	1	0	1
Bay	0	0	0	0	1	1
Cass	0	0	0	0	2	2
Cheboygan	0	0	0	1	0	1
Clare	0	0	0	0	2	2
Crawford	0	0	0	1	0	1
Emmet	0	0	0	1	0	1
Gladwin	40	24,045	7	20	80	100
Gratiot	1	0	1	3	2	5
Hillsdale	1	0	1	0	0	0
Huron	0	0	0	0	1	1
Iosco	0	0	0	0	1	1
Isabella	11	4,003	3	2	14	16
Lenawee	0	0	0	1	0	1
Livingston	0	0	0	1	0	1
Mecosta	1	0	1	0	1	1
Midland	2	407	0	5	7	12
Missaukee	0	0	0	0	1	1
Monroe	0	0	0	0	2	2
Montcalm	3	0	3	4	5	9
Muskegon	1	0	0	0	1	1
Newaygo	1	0	1	0	1	1
Oceana	0	0	0	1	0	1
Ogemaw	4	170	1	6	16	22
Osceola	0	0	0	1	0	1
Oscoda	0	0	0	1	0	1
Otsego	0	0	0	0	2	2
Roscommon	0	0	0	0	1	1
Saginaw	2	15	1	3	1	4
Sanilac	0	0	0	1	0	1
St. Clair	0	0	0	2	0	2
Shiawassee	0	0	0	1	1	2
Tuscola	0	0	0	0	1	1
Washtenaw	0	0	0	1	0	1
Wayne	0	0	0	1	0	1
Ttl. July	87	35,105	24	69	170	239
Ttl. June	84	53,037	13	67	192	259
Difference	3	17,932	11	2	22	20

Gas wells: Arenac County, 3 for 10,580,000 ft., and Muskegon County, 1 for 600,000 ft.

LIMA FIELD

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Dig.	Ttl.
Darke	0	0	0	0	1	1
Hardin	0	0	0	0	4	4
Henry	0	0	0	0	4	4
Hancock	0	0	0	0	3	3
Mercer	0	0	0	0	2	2
Putnam	2	105	0	0	0	0
Logan	0	0	0	0	2	2
Lucas	0	0	0	0	2	2
Sandusky	2	0	0	0	1	1
Shelby	0	0	0	0	3	3
Seneca	2	750	0	0	1	1
Wood	0	0	0	0	2	2
Wyandot	0	0	0	0	2	2
Ttl. July	6	855	0	0	27	27
Ttl. June	7	62	3	0	32	32
Difference	1	793	3	0	5	5

Gas wells completed: Sandusky, 2; Seneca, 1.

ILLINOIS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rgs.	Dig.	Ttl.
Bond	0	0	0	0	1	1
Clay	3	3,102	0	5	9	14
Clark	0	0	0	0	1	1
Christian	0	0	0	0	1	1
Fayette	0	0	0	0	2	2
Richland	0	0	0	0	1	1
Randolph	0	0	0	0	1	1
Marion	8	1,634	0	1	25	26
St. Clair	1	0	1	0	0	0
Clinton	3	115	1	0	2	2
Wayne	2	135	0	1	5	6
Perry	0	0	0	0	1	1
Jefferson	0	0	0	0	1	1
Crawford	0	0	0	0	3	3
McDonough	0	0	0	0	1	1
Lawrence	0	0	0	0	1	1
Washington	0	0	0	0	2	2
Pope	0	0	0	0	1	1
Ttl. July	17	4,986	2	7	58	65
Ttl. June*	22	3,461	5	11	45	56
Difference	5	1,525	3	4	13	9

Gas wells completed, none.

*Revised.

INDIANA

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Dig.	Ttl.
Crawford	0	0	0	0	1	1
Decatur	1	0	0	0	0	0
DeKalb	0	0	0	0	1	1
Delaware	0	0	0	0	1	1
DuBois	0	0	0	0	1	1
Gibson	0	0	0	0	2	2
Hamilton	1	0	0	0	0	0
Harrison	0	0	0	0	1	1
Knox	2	0	0	0	1	1
Lagrange	0	0	0	0	1	1
Martin	3	10	1	0	1	1
Pike	1	5	0	0	5	5
Porter	0	0	0	0	1	1
Rush	1	0	0	0	0	0
Spencer	3	30	0	0	0	0
Sullivan	1	0	1	0	2	2
Vanderburg	1	10	0	0	1	1
Vigo	1	60	0	0	1	1
Ttl. July	15	115	2	0	20	20
Ttl. June	10	35	6	0	27	27
Difference	5	80	4	0	7	7

Gas wells completed: Decatur, 1; Hamilton, 1; Knox, 2; Martin, 1; Rush, 1; total, 6.

KENTUCKY

Summary of Field Operations

County—	Comp.	Prod.	Dry	Rigs	Dig.	Ttl.
Knott	3	0	0	1	6	7
Lee	12	186	1	2	4	6
Powell	2	13	0	1	3	4
Floyd	1	0	0	1	1	2
Martin	0	0	0	1	2	3
Magoffin	1	5	1	1	1	2
Elliott	0	0	1	0	0	0
Hancock	17	190	3	0	4	4
Ohio	30	340	13	0	20	20
Daviess	7	30	3	0	11	11
McLean	7	730	0	0	6	6
Webster	0	0	0	1	0	1
Metcalfe	0	0	0	0	1	1
Muhlenberg	0	0	2	0	1	1
Hopkins	0	0	0	0	2	2
Butler	1	25	0	0	2	2
Ttl. July	81	1,519	24	8	64	72
Ttl. June	103	2,572	18	0	97	97
Difference	22	1,053	6	8	33	25

Gas wells completed: Knott, 3; Floyd, 1; Hancock, 5; Ohio, 4; Daviess, 1; total, 14.

WILDCAT OPERATIONS

CALIFORNIA

IMPORTANT WELLS AND NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Shell Oil, No. 1-25 Capitan, Santa Barbara Co.	32- 5-30	2,786	completing
Hancock-Bush, No. 1-R Santa Maria, Santa Barbara	25-10-34	5,020	br. sh. drlg.
Macrate, A. N., No. 2-F Santa Maria, Santa Barbara	26-10-34	2,970	sd. sh. drlg.
Pet. Prop., Inc., No. 1-R Santa Maria, Santa Barbara	19-10-33	722	idle
S. M. Oil, No. 1 Porto, Santa Maria, Santa Barbara	27-10-34	1,860	sd. sh. drlg.
Sed Oil, No. 1 Mills, Santa Maria, Santa Barbara Co.	27-10-34	2,990	sd. sh. drlg.
Ohio Oil, No. 1-M Santa Maria, Santa Barbara Co.	21-10-34	416	sd. sh. drlg.
Union Oil, No. 2-R Santa Maria, Santa Barbara Co.	21-10-34	2,695	sd. sh. drlg.
Union Oil, No. 1-19 Enos, Santa Maria, Santa Barbara	23-10-34	2,796	cleaning out
Union Oil, No. 1 Cook, Santa Maria, Santa Barbara	30-10-33	6,485	br. sh. drlg.
Union Oil, No. 1-B Santa Maria, Santa Barbara Co.	21-10-34	5,325	cleaning out
Union Oil, No. 2-V Santa Maria, Santa Barbara Co.	21-10-34	3,516	idle
Union Oil, No. 4 Battle, Santa Maria, Santa Barbara	24-10-34	1,875	sd. sh. drlg.
Union Oil, No. 19 Orcutt, Santa Barbara Co.	26- 9-34	4,278	rig. to pump
Crude Oil Drlg., No. 1 Casmalia, Santa Barbara Co.	19- 9-34	397	sd. sh. drlg.
Pac. Western Oil, No. 4 Santa Maria, Santa Barbara	21-10-34	4,276	br. sh. drlg.
Rice Ranch Oil, No. 4 Orcutt, Santa Barbara Co.	23- 9-34	4,330	P.B. 3,730
So. Cal. Drlg., No. 1-H Santa Maria, Santa Barbara	9- 9-33	5,003	rig. to pump
101 Oil, No. 1 Pt. Concepcion, Santa Barbara Co.	35- 5-33	1,750	sd. sh. drlg.
Tide Water A. O., No. 1-L Santa Rita, Santa Barbara	3- 6-33	1,990	br. sh. drlg.
Hancock Oil, No. 2 Los Alamos, Santa Barbara Co.	6- 7-32	4,990	hd. sh. drlg.
Arnold Oil, No. 2 Los Alamos, Santa Barbara Co.	8- 8-33	5,505	sd. sh. drlg.
Del Mar Oil, No. 1 Summerland, Santa Barbara Co.	16- 4-26	3,360	rd. sh. drlg.
Pet. Securities, No. 1 Calumet, Shiells, Ventura Co.	3- 3-19	3,840	flow. 395 b.d.
Texas Co., No. 129 Shiells, Ventura Co.	4- 3-19	3,447	form. test
Texas Co., No. 133 Shiells, Ventura Co.	4- 3-19	3,550	sd. sh. drlg.
Union Oil, No. 16 Bardsdale, Ventura Co.	12- 3-20	5,542	sd. sh. drlg.
Texas Co., No. 1 Pierce, Camarillo, Ventura Co.	20- 2-21	2,866	sd. sh. drlg.
Richfield Oil, No. 1 McFarland, Camarillo, Ventura	13- 2-21	1,418	sd. sh. drlg.
Condor Oil, No. 1 Sespe, Ventura Co.	6- 4-19	2,040	O.S. drlg.
Ivers, H. A., No. 14 Star, Sespe, Ventura Co.	1- 4-20	1,502	sd. sh. drlg.
Williamson Oil, No. 1 Sespe, Ventura Co.	1- 4-20	300	sd. sh. drlg.
Topa Topa Oil, No. 2 Sespe, Ventura Co.	33- 5-19	4,050	sd. sh. drlg.
Speik Oil, No. 2 Sespe, Ventura Co.	33- 5-19	2,940	sd. sh. drlg.
Colima Oil, No. 2 Sespe, Ventura Co.	25- 5-19	3,400	rig. to pump
Skyline Oil, No. 1-H Hopper Canyon, Ventura Co.	13- 4-18	848	sd. sh. drlg.
Vai, Giovani, No. 1 Ojai, Ventura Co.	4- 4-21	1,100	hd. sh. drlg.
C. C. M. Oil, No. 2 Padre Canyon, Ventura Co.	23- 3-24	7,495	O.S. drlg.
C. C. M. Oil, No. 15 Rincon, Ventura Co.	17- 3-24	4,660	P.B. 4,600
C. C. M. Oil, No. 16 Rincon, Ventura Co.	17- 3-24	211	sd. sh. drlg.
Richfield Oil, No. 2 Hobson, Rincon, Ventura Co.	8- 3-24	4,762	cmtd. 4,658
Rincon Pet. Co., No. 1 Shudde, Rincon, Ventura Co.	tideland	2,770	sd. sh. drlg.
Oxnard Oil, No. 1 Oxnard, Ventura Co.	10- 1-22	3,105	sd. sh. drlg.
Vaca Oil, No. 2 Oxnard, Ventura Co.	6- 1-21	1,756	sd. sh. drlg.
Tide Water A. O., No. 28 V.L.W., Ventura, Ventura	26- 3-23	2,951	sd. sh. drlg.
Tide Water A. O., No. 31 V.L.W., Ventura, Ventura	24- 3-23	6,831	fish. D.P.
Tide Water A. O., No. 30 Lloyd, Ventura, Ventura	27- 3-23	1,721	sd. sh. drlg.
Tide Water A. O., No. 61 Lloyd, Ventura, Ventura	27- 3-23	5,083	sd. sh. drlg.
Tide Water A. O., No. 62 Lloyd, Ventura, Ventura	27- 3-23	5,755	fish. D.P.
Tide Water A. O., No. 137 Lloyd, Ventura, Ventura	27- 3-23	8,673	test. W.S.O.
Tide Water A. O., No. 18 Hartman, Ventura, Ventura	22- 3-23	5,760	hd. sh. drlg.
Shell Oil, No. 90 Taylor, Ventura, Ventura Co.	30- 3-23	976	sd. sh. drlg.
Shell Oil, No. 35 Gosnell, Ventura, Ventura Co.	28- 3-23	8,950	redrlg. 8,721
General Pet., No. 17 Barnard, Ventura, Ventura Co.	23- 3-23	8,176	fish. D.P.
Den Petroleum, No. 1 Devils Den, Kern Co.	20-25-19	4,365	fish. D.P.
Tide Water A. O., No. 12-D Lost Hills, Kern Co.	11-26-20	1,654	pump. 25 b.d.
Tide Water A. O., No. 9-R-3 Lost Hills, Kern Co.	2-26-20	1,370	sd. sh. drlg.
Argo Pet., No. 1-F Lost Hills, Kern Co.	11-26-20	820	idle
Texas Co., No. 1-A Overall, Lost Hills, Kern Co.	33-25-20	598	sd. sh. drlg.
East Puente Oil, No. 24-11 McKittrick, Kern Co.	11-30-21	1,308	rig. to pump
Continental Oil, No. 2 Wasco, Kern Co.	8-27-24	9,560	hd. sh. drlg.
Belridge Oil, No. 43-26 North Belridge, Kern Co.	26-27-20	1,982	sd. sh. drlg.
Belridge Oil, No. 53-26 North Belridge, Kern Co.	26-27-20	3,621	br. sh. drlg.
Belridge Oil, No. 61-26 North Belridge, Kern Co.	26-27-20	5,875	cmtd. 5,872
Belridge Oil, No. 28-1 North Belridge, Kern Co.	1-28-20	5,976	br. sh. drlg.
Tide Water A. O., No. 6 North Belridge, Kern Co.	34-27-20	8,125	sd. sh. drlg.
Texas Co., No. 1 Martin, North Belridge, Kern Co.	22-27-20	7,761	br. sh. drlg.
Shell Oil, No. 1-2 Olcese, Pyramid, Kern Co.	16-28-29	1,740	pump. 100 b.d.
Shell Oil, No. 18 Caldwell, Round Mountain, Kern Co.	7-28-29	1,970	sd. sh. drlg.
Honolulu Oil, No. 35 Round Mountain, Kern Co.	20-28-29	1,941	cleaning out
Honolulu Oil, No. A Round Mountain, Kern Co.	18-28-29	1,795	O.S. drlg.
Honolulu Oil, No. 12 Round Mountain, Kern Co.	18-28-29	2,057	pump. 445 b.d.
Pebble Beach Oil, No. 1 Round Mountain, Kern Co.	16-28-29	1,531	sd. sh. drlg.
Fremont Oil, No. 1 Olcese, Round Mountain, Kern Co.	26-28-29	2,307	sd. sh. drlg.
Tavis, J. J., No. 1 Round Mountain, Kern Co.	4-29-29	2,300	sd. sh. drlg.
Cal-Western Oil, No. 3 C.C., Round Mountain, Kern	12-28-28	2,030	pump. 430 b.d.
Standard Oil, No. 6 Ward, Kern Front, Kern Co.	24-28-27	2,030	pump. 154 b.d.
Standard Oil, No. 7 Ward, Kern Front, Kern Co.	24-28-27	1,775	form. test
Whittier, M. H., No. 5 Cauley, Kern Front, Kern Co.	16-28-27	3,013	P.B. 2,512
Oils, Inc., of California, No. 7-2 Kern Front, Kern Co.	13-28-27	1,289	P.B. 1,138
Oils, Inc., of California, No. 7-3 Kern Front, Kern Co.	13-28-27	1,289	pump. 77 b.d.
Martin, T., No. 1 Sesnon, Kern Front, Kern Co.	17-28-27	2,760	sd. sh. drlg.
California Star Oil, No. 2-80 Kern Front, Kern Co.	22-28-27	2,650	O.S. drlg.
Texas Co., No. 4 Lehman, Kern Front, Kern Co.	23-28-27	2,770	sd. sh. drlg.
Shell Oil, No. 1 Bellview, Kern Co.	31-29-27	8,210	sd. sh. drlg.
Palmer & Luse, No. 1 Kern River, Kern Co.	10-28-28	3,030	gr. sh. drlg.
Fuhrman, A., No. 10 Kern River, Kern Co.	28-28-28	250	sd. sh. drlg.
McKeon, Inc., No. 1-C Kern River, Kern Co.	32-28-28	1,185	dry; abd.
Ring Oil, No. 1 Rogers, Mount Poso, Kern Co.	29-26-28	1,725	sd. sh. drlg.
Framac Oil, No. 1 Brown, Mount Poso, Kern Co.	22-27-27	1,351	fish. D.P.
Hobbee Oil, No. 2 Mount Poso, Kern Co.	14-27-27	1,195	pump. 40 b.d.
Tide Water A. O., No. 2 Newhope, Mount Poso, Kern	29-27-27	2,775	sd. sh. drlg.
Union Oil, No. 12 Tribe, Mount Poso, Kern Co.	28-27-28	277	sd. sh. drlg.
General Pet., No. 1 West Premier, Kern Co.	36-27-26	6,115	sd. sh. drlg.
H. & H. Oil, No. 1 Neff, Fruitvale, Kern Co.	23-29-27	3,605	O.S. drlg.
Western Gulf Oil, No. 7 Red Ribbon, Fruitvale, Kern	27-29-27	3,359	cmtd. 3,310
Western Gulf Oil, No. 26 K.C.L., Fruitvale, Kern Co.	22-29-27	3,820	cmtd. 3,761
Siemon Bros., No. 1 Krebs, Fruitvale, Kern Co.	15-29-27	3,985	O.S. drlg.
Simmel, L. C., No. 1 Fruitvale, Kern Co.	23-29-27	3,341	cmtd. 3,334
Southwestern Dev. Co., No. 1 K.C.L., Fruitvale, Kern	15-29-27	2,524	sd. sh. drlg.
Sandy Oil, No. 2 Fruitvale, Kern Co.	26-29-27	3,200	idle
American Expl., No. 1-G Mountain View, Kern Co.	18-30-29	4,792	P.B. 4,722
American Expl., No. 1-C Mountain View, Kern Co.	18-30-29	4,755	cmtd. 4,440
Barnsdall Oil, No. 2-N Mountain View, Kern Co.	19-30-29	1,982	sd. sh. drlg.
Mohawk Pet., No. 5 Earl Fruitt, Mountain View, Kern	4-31-29	4,351	sd. sh. drlg.
Ohio Oil, No. 2-B Mountain View, Kern Co.	33-30-29	5,222	pump. 65 b.d.
North American Oil, No. 1-T Mountain View, Kern	9-31-29	3,457	fish. D.P.
Hogan Pet., No. 4 Symons, Mountain View, Kern Co.	5-31-29	6,188	P.B. 5,236
Hogan Pet., No. 3 Peters, Mountain View, Kern Co.	5-31-29	5,177	sd. sh. drlg.
Hogan Pet., No. 10 Porter, Mountain View, Kern Co.	29-30-29	6,016	cmtd. 5,620
Greer, P. H., No. 1 Perrel, Mountain View, Kern Co.	9-31-29	3,790	fish. D.P.
Greer, P. H., No. 2 Perrel, Mountain View, Kern Co.	9-31-29	6,639	redrlg. 5,070
General Pet., No. 1 Houchin, Arvin, Kern Co.	27-31-29	152	sd. sh. drlg.
Arkelo Oil, No. 1 Lerdo, Kern Co.	23-28-26	10,050	redrlg. 7,581
Union Oil, No. 1-34 Rio Bravo, Kern Co.	34-28-25	10,312	cleaning out
Continental Oil, No. 1 Rosedale, Kern Co.	12-29-26	10,210	fish. D.P.
Standard Oil, No. 11-7 KCL, Greeley, Kern Co.	20-29-26	6,652	sd. sh. drlg.
Union Oil, No. 4 San Emidio, Kern Co.	31-11-22	2,070	P.B. 768
Shell Oil, No. 21-14 Old River, Kern Co.	14-30-25	8,613	P.B. 8,325
Shell Oil, No. 4-30 Ten Section, Kern Co.	33-30-26	6,963	sd. sh. drlg.
Lilly Oil, No. 1 Midway-Sunset, Kern Co.	36-32-23	1,763	sd. sh. drlg.
C. C. M. Oil, No. 25-21 Midway-Sunset, Kern Co.	21-32-23	2,180	cleaning out
C. C. M. Oil, No. 43-21 Midway-Sunset, Kern Co.	21-32-23	1,697	br. sh. drlg.
C. C. M. Oil, No. 1-U.S., Midway-Sunset, Kern Co.	30-32-24	1,184	sd. sh. drlg.
Evans, H. B., No. 19 Midway-Sunset, Kern Co.	35-32-23	1,729	cmtd. 1,727
Quality Oil, No. 1-W.P., Midway-Sunset, Kern Co.	27-32-23	1,911	sidetracking
Texas Co., No. 23 Midway-Sunset, Kern Co.	32-32-24	3,005	scrape walls
U. S. Pumping Equip., No. 5 Midway-Sunset, Kern	12-11-24	1,350	rig. to pump
Richfield Oil, No. 8-H-A Crampton, Elk Hills, Kern	1-31-24	2,960	cleaning out
Reserve Oil & Gas Co., No. 33-4 Tejon, Kern Co.	33-11-19	5,443	P.B. 4,541
Wilshire Oil, No. 1 Tejon, Kern Co.	5-10-19	5,405	dry; abd.
Ohio Oil, No. 2 Tejon, Kern Co.	21-11-19	9,654	P.B. 5,975
Seaboard Oil, No. 1 Firebaugh, Madera Co.	27-12-15	1,622	sd. sh. drlg.
Western Gulf Oil, No. 4 Cantua, Fresno Co.	32-16-15	6,528	idle
K. N. D. A., No. 4-18-J Kettleman North, Fresno Co.	18-21-17	10,830	core. O.S.
K. N. D. A., No. 47-28-J Kettleman North, Fresno Co.	28-21-17	7,115	sd. sh. drlg.
K. N. D. A., No. 67-28-J Kettleman North, Fresno Co.	28-21-17	7,877	cleaning out
K. N. D. A., No. 2-34-J Kettleman North, Fresno Co.	34-21-17	7,940	flow. 2,240 b.d.
K. N. D. A., No. 41-4-P Kettleman North, Fresno Co.	4-22-17	6,873	br. sh. drlg.

KEY TO ABBREVIATIONS USED IN DRILLING REPORTS

Abd., abandoned.
Bldg., building.
B.D., barrels daily.
B.P., back pressure.
B.R., building rig.
Br. sh., brown shale.
B.S., basic sediment.
C.P., casing pressure.
Cd. or Crd., cored.
C.D., corrected depth.
Cg., coring.
C.L., center line.
Cmtd., cemented.
C.O., cleaning out.
Comp., completed.
Compr., compressor.
C.P., casing pressure, also cement through perforations.
Csg., casing.
D.D., drilling (or drilled) deeper.
Drlg. or Drg., drilling.
Drk. or Dk., derrick.
D.S., drill stem.
D.&A., dry and abandoned.
Fsg., fishing.
Gbo., gumbo.
G.I., gas injection.
Gr., gravity.
Gr. sd., gray sand.
Grn. sh., green shale.
Hd. sd., hard sand.
H.F.W., hole full of water.
I.P., initial production.
L., lime.
L.D.D., later drilled deeper.
Lnr., liner.
Loc., location.
M.I.M., moving in material.
M.I.R., moving in rig.
M.I.R.T., moving in rotary tools.
M.O.T., milling on tools.
O.I.H., oil in hole.
O.S., oil sand.
O.T.D., old total depth.
O.W.D.D., old well drilling deeper.
O.W.P.B., old well plugging back.
P.B., plugging or plugged back.
P.B.P., plugging big pipe.
P.L., pipe line.
P.L.O., pipe line oil.
Pmpg., pumping.
P.O.P., putting on pump.
P.P., pulled pipe.
Rd. sd., red sand.
Rd. sh., red shale.
Recmt., recemented.
Rmg., reaming.
Redrlg., redrilling.
Rng., running.
R.O.G., rig on ground.
R.P., rock pressure.
R.U., rigging up.
R.U.R., rigging up rotary.
R.U.R.T., rigging up rotary tools.
R.U.S.T., rigging up standard tools.
R.&T., rods and tubing.
S. or Sd., sand.
S.D., shut down.
Sdy. sh., sandy shale.
Sdtr., or St., sidetracking.
S.D.P.L., shut down for pipe line.
S.D.W.O., shut down awaiting orders.
S.G., show gas.
Sh.&L., shale and lime.
S.I., shut in.
S.I.P., shut in, prorated.
S.L.M., steel line measurement.
S.O., show oil.
S.O.G.&W., show of oil, gas and water.
Spdg. or Spd., spudding.
S.R., straightreaming.
Stdg., standardizing (also standing).
S.W., salt water.
Swbg., swabbing.
T.A., temporarily abandoned.
Tbg., tubing.
T.D., total depth.
T.P., tubing pressure.
Tr., tract.
U.R., underreaming.
W.I.H., water in hole.
W.O., workover.
W.O.C. or W.O.C.S., waiting on cement to set.
W.P., working pressure.
W.S.O., water shutoff.
W.S.S.O.K., water shutoff O.K.
W.S.O.N.G., water shut off no good
W.S.R. or W.O.S.R., wait on standard rig.
Wtr., water.

K. N. D. A., No. 83-4-P Kettleman North, Fresno Co.	4-22-17	5,795	br. sh. drlg.
K. N. D. A., No. 6-6-Q Kettleman North, Kings Co.	6-22-18	2,711	sd. sh. drlg.
Standard Oil, No. 27-33-J Kettleman North, Fresno	33-21-17	5,765	sd. sh. drlg.
Standard Oil, No. 41-33-J Kettleman North, Fresno	33-21-17	8,025	completing
Standard Oil, No. 4-3-P Kettleman North, Kings Co.	3-22-17	7,651	sd. sh. drlg.
Standard Oil, No. 78-3-P Kettleman North, Kings Co.	3-22-17	8,210	sd. sh. drlg.
Temblor Oil, No. 1-B Kettleman Middle, Kings Co.	25-23-18	7,551	br. sh. drlg.
Dudley Ridge Dev., No. 1 Tulare Lake, Kings Co.	24-23-20	2,720	bl. sh. drlg.
Tri-Counties Oil, No. 1 Tulare Lake, Kings Co.	10-23-22	5,830	sd. sh. drlg.
Martin, J. D., No. 4-A Pismo, San Luis Obispo Co.	5-32-13	3,326	sd. sh. drlg.
Temblor Oil, No. 1 Panorama, San Luis Obispo Co.	22-32-21	2,951	gr. sd. drlg.
Burkholder Oil, No. 1 Panorama, San Luis Obispo Co.	14-10-26	3,405	deepening
Hancock Oil, No. 1 Huasna, San Luis Obispo Co.	30-12-33	968	sd. sh. drlg.
Lewis, A. O., No. 1 Pecho, Huasna, San Luis Obispo	34-30-10	2,772	recmtd. 2,320
Elba Oil, No. 1 Pajaro, Monterey Co.	6-13-2	2,254	gr. sd. drlg.
Anderson, Amil, No. 1 Cholame, Monterey Co.	15-24-14	1,610	sd. sh. drlg.
Texas Co., No. 2 Eureka, Humboldt Co.	22- 3-1	6,473	flow. gas
Amerada Pet., No. 1 Hamilton, Rio Vista, Solano Co.	24- 4-2	4,429	shut in
Amerada Pet., No. 1 N. Hamilton, Rio Vista, Solano	36- 4-2	1,993	sd. sh. drlg.
Buttes Oilfields, Ltd., No. 1 Kent, Sutter Co.	2-15-1	5,830	cleaning out
Standard Oil, No. 1 Delano, Tulare Co.	36-24-23	5,698	test. W.S.O.
Turner, L. E., No. 1 Tipton, Tulare Co.	15-22-26	3,281	P.B. 2,802
Tulare Dome Oil, No. 1 Allensworth, Tulare Co.	17-21-23	1,065	sd. sh. drlg.
Jennings, E. P., No. 2 Allensworth, Tulare Co.	33-23-23	542	sd. sh. drlg.
Stone & Youngberg, No. 1 Two Rock, Sonoma Co.	29- 5-8	475	Franciscan
Petaluma Expl., No. 1 Petaluma, Sonoma Co.	33- 5-6	143	sd. sh. drlg.
Standard Oil, No. 1 Woodland, Yolo Co.	32- 9-1	3,540	sd. sh. drlg.
Empire O. & G., No. 1 Woodland, Yolo Co.	8- 9-3	231	sd. sh. drlg.

IMPORTANT WELLS AND SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Richfield Oil, No. 1-SF El Segundo, Los Angeles Co.	18- 3-14	7,690	P.B. 7,674
Richfield Oil, No. 2 Elsie, El Segundo, Los Angeles	12- 3-15	4,161	sd. sh. drlg.
Union Oil, No. 3 El Segundo, Los Angeles Co.	18- 3-14	2,981	sd. sh. drlg.
Sunshine Oil, No. 1 El Segundo, Los Angeles Co.	12- 3-15	3,284	sd. sh. drlg.
Ohio Oil, No. 6 Gough, El Segundo, Los Angeles Co.	7- 3-14	5,250	sd. sh. drlg.
Texas Co., No. 3 Security, El Segundo, Los Angeles	18- 3-14	7,140	sd. sh. drlg.
Texas Co., No. 4 Security, El Segundo, Los Angeles	18- 3-14	6,071	sd. sh. drlg.
Royalty Service, No. 2 El Segundo, Los Angeles Co.	7- 3-14	4,530	sd. sh. drlg.
Standard Oil, No. 2 Refinery, El Segundo, L. Angeles	13- 3-15	3,192	sd. sh. drlg.
Pac. Western Oil, No. 1 El Segundo, Los Angeles	7- 3-14	3,897	sd. sh. drlg.
Getty Oil, No. 1 El Segundo, Los Angeles Co.	7- 3-14	4,540	sd. sh. drlg.
Republic Pet., No. 2 El Segundo, Los Angeles Co.	18- 3-14	7,699	milling
Douglas Oil, No. 9 Peck, Lawndale, Los Angeles Co.	20- 3-14	7,110	fish. D.P.
Young & Bryan, No. 1 Peck, Lawndale, Los Angeles	20- 3-14	7,240	br. sh. drlg.
Calizoo Oil, No. 1 S.L.A., Los Angeles Co.	16- 3-13	7,523	P.B. 5,800
I. V. Oil, No. 1 Torrance, Los Angeles Co.	16- 4-14	4,280	cmtd. 4,100
Keystone Oil, No. 2 Torrance, Los Angeles Co.	8- 4-14	1,591	sd. sh. drlg.
B. C. L. Oil, No. 1 Torrance, Los Angeles Co.	5- 4-14	3,190	sd. sh. drlg.
C. C. M. Oil, No. 34-T Torrance, Los Angeles Co.	16- 4-14	4,282	will deepen
Loma Verde Oil, No. 12 Torrance, Los Angeles Co.	16- 4-14	4,450	sd. sh. drlg.
McLaren & Assoc., No. 1 Palos Verdes, Los Angeles	27- 4-14	3,992	P.B. 1,600
Standard Oil, No. 84 L.A.I., Inglewood, Los Angeles	8- 2-14	137	cmtd. 19
Texas Co., No. 1 Moynier, Inglewood, Los Angeles	8- 2-14	3,764	P.B. 2,790
Country Club Oil, No. 1 Inglewood, Los Angeles Co.	19- 2-14	5,000	gr. sd. drlg.
Shell Oil, No. 91 Reyes, Dominguez, Los Angeles Co.	33- 3-13	7,376	sd. sh. drlg.
Tide Water A. O., No. 14 Dominguez, Los Angeles Co.	34- 3-13	2,552	sd. sh. drlg.
Union Oil, No. 54 Callender, Dominguez, Los Angeles	33- 3-13	6,850	sd. sh. drlg.
Union Oil, No. 56 Callender, Dominguez, Los Angeles	33- 3-13	957	sd. sh. drlg.
Union Oil, No. 47 Hellman, Dominguez, Los Angeles	33- 3-13	6,250	sd. sh. drlg.
Barnsdall Oil, No. 16 O'Dea, Rosecrans, Los Angeles	18- 3-13	7,531	O.S. drlg.
Barnsdall Oil, No. 17 O'Dea, Rosecrans, Los Angeles	18- 3-13	6,781	sd. sh. drlg.
Union Oil, No. 11 Rosecrans, Los Angeles Co.	18- 3-13	5,960	fish. tubing
Union Oil, No. 17 Rosecrans, Los Angeles Co.	18- 3-13	212	sd. sh. drlg.
Macrate, A. N., No. 2 Rosecrans, Los Angeles Co.	17- 3-13	6,940	sd. sh. drlg.
Universal Consd., No. 1-T Rosecrans, Los Angeles Co.	18- 3-13	7,559	to perforate
Bolsa Chica Oil, No. 1 Rosecrans, Los Angeles Co.	20- 3-13	7,530	pipe bad
Union Oil, No. 19 D.R., Playa Del Rey, Los Angeles	27- 2-15	5,762	sd. sh. drlg.
Sharby Oil, No. 1 Playa Del Rey, Los Angeles Co.	22- 2-15	3,741	sd. sh. drlg.
Burt, A. G., No. 1 Newhall, Los Angeles Co.	36- 4-17	1,985	sd. sh. drlg.
Barnsdall Oil, No. 2-S.F., Newhall, Los Angeles Co.	26- 4-17	4,310	sd. sh. drlg.
Holbrook Pet., No. 1 Newhall, Los Angeles Co.	28- 4-16	5,824	recmtd. 5,733
General Pet., No. 12 Ford, Wilmington, Los Angeles	4- 5-13	1,780	sd. sh. drlg.
General Pet., No. 15 Ford, Wilmington, Los Angeles	4- 5-13	3,078	sd. sh. drlg.
General Pet., No. 18 Ford, Wilmington, Los Angeles	4- 5-13	4,750	sd. sh. drlg.
General Pet., No. 19 Ford, Wilmington, Los Angeles	4- 5-13	2,600	sd. sh. drlg.
General Pet., No. 21 Ford, Wilmington, Los Angeles	4- 5-13	3,100	sd. sh. drlg.
General Pet., No. 3 Isco, Wilmington, Los Angeles	4- 5-13	3,200	sd. sh. drlg.
General Pet., No. 6-T Wilmington, Los Angeles Co.	4- 5-13	3,615	sd. sh. drlg.
General Pet., No. 8-T Wilmington, Los Angeles Co.	4- 5-13	3,461	sd. sh. drlg.
Bankline Oil, No. 6-P.T., Wilmington, Los Angeles	34- 4-13	2,511	sd. sh. drlg.
Bankline Oil, No. 9-P.T., Wilmington, Los Angeles	33- 4-13	3,168	sd. sh. drlg.
Bankline Oil, No. 20-P.T., Wilmington, Los Angeles	34- 4-13	2,461	sd. sh. drlg.
Burnoel Oil, No. 586-A Wilmington, Los Angeles Co.	32- 4-13	3,520	pump. 238 b.d.
Burnoel Oil, No. 586-B Wilmington, Los Angeles Co.	33- 4-13	2,172	sd. sh. drlg.
Caminol Co., No. 1 Wilmington, Los Angeles Co.	32- 4-13	3,630	flow. 647 b.d.
Crude Oil Drlg., No. 1-M Wilmington, Los Angeles	33- 4-13	3,406	sd. sh. drlg.
Dunlap, D. D., No. 10 Wilmington, Los Angeles Co.	33- 4-13	3,420	flow. 152 b.d.
Eitra Oil, No. 10 Wilmington, Los Angeles Co.	33- 4-13	3,655	sd. sh. drlg.
Hall, Inc., No. 1 Lakme, Wilmington, Los Angeles	32- 4-13	3,825	sd. sh. drlg.
Jergins Trust, No. 3 Wilmington, Los Angeles Co.	33- 4-13	3,460	sd. sh. drlg.
McDonald & Burns, No. 1 Wilmington, Los Angeles	32- 4-13	3,140	sd. sh. drlg.
Oceanic Oil, No. 1 Wilmington, Los Angeles Co.	33- 4-13	3,300	sd. sh. drlg.
Royalty Service, No. 3-S.F., Wilmington, Los Angeles	33- 4-13	2,857	sd. sh. drlg.
Royalty Service, No. 4-S.F., Wilmington, Los Angeles	33- 4-13	2,850	sd. sh. drlg.
Royalty Service, No. 1-P Wilmington, Los Angeles	32- 4-13	3,630	flow. 664 b.d.
Royalty Service, No. 842-2 Wilmington, Los Angeles	33- 4-13	4,861	sd. sh. drlg.
Royalty Service, No. 1-C Wilmington, Los Angeles	33- 4-13	3,604	sd. sh. drlg.
Royalty Service, No. 5-A Wilmington, Los Angeles	33- 4-13	3,050	sd. sh. drlg.
Royalty Service, No. 3-B Wilmington, Los Angeles	33- 4-13	3,523	sd. sh. drlg.
Selegna Drlg., No. 7 Wilmington, Los Angeles Co.	33- 4-13	3,320	sd. sh. drlg.
Selegna Drlg., No. 8 Wilmington, Los Angeles Co.	32- 4-13	2,530	sd. sh. drlg.
Sonwell Oil, No. 2 Wilmington, Los Angeles Co.	33- 4-13	2,666	sd. sh. drlg.
Texas Co., No. 1 Refinery, Wilmington, Los Angeles	34- 4-13	2,121	fish. D.C.&B.
Union Pacific, No. 4 Wilmington, Los Angeles Co.	4- 5-13	2,656	sd. sh. drlg.
Union Pacific, No. 9 Wilmington, Los Angeles Co.	33- 4-13	3,619	sd. sh. drlg.
Union Pacific, No. 20 Wilmington, Los Angeles Co.	3- 5-13	2,528	sd. sh. drlg.
Union Pacific, No. 36 Wilmington, Los Angeles Co.	33- 4-13	3,121	sd. sh. drlg.
Union Pacific, No. 39 Wilmington, Los Angeles Co.	33- 4-16	2,810	sd. sh. drlg.
Union Pacific, No. 42 Wilmington, Los Angeles Co.	33- 4-13	1,983	sd. sh. drlg.
Union Pacific, No. 43 Wilmington, Los Angeles Co.	4- 5-13	3,645	sd. sh. drlg.
Union Pacific, No. 45 Wilmington, Los Angeles Co.	4- 5-13	2,397	sd. sh. drlg.
Union Pacific, No. 2-C Wilmington, Los Angeles Co.	33- 4-13	3,477	flow. 120 b.d.
Union Pacific, No. 3-C Wilmington, Los Angeles Co.	33- 4-13	2,861	sd. sh. drlg.
Wilbur, V. R. G., No. 1-S.F., Wilmington, Los Angeles	33- 4-13	2,923	sd. sh. drlg.
Wilton Oil, No. 1 Wilmington, Los Angeles Co.	5- 5-13	1,952	sd. sh. drlg.
Sunset Oil, No. 1 Manhattan, Los Angeles Co.	19- 3-14	7,400	sd. sh. drlg.
Julian, C. A., No. 1 Koch, Walnut, Los Angeles Co.	5- 2-9	2,187	sd. sh. drlg.
Richfield Oil, No. 2 Ciocca, Montebello, Los Angeles	5- 2-11	5,966	testing
Richfield Oil, No. 1 Estrada, Montebello, Los Angeles	5- 2-11	5,540	cleaning out
Texas Co., No. 17 Baldwin, Montebello, Los Angeles	6- 2-11	7,610	sd. sh. drlg.
Standard Oil, No. 2 Temple, Montebello, Los Angeles	10- 2-11	3,249	cleaning out
Texas Co., No. 3 Flower, Long Beach, Los Angeles	19- 4-12	4,843	fish. D.P.
Mitchell, A. D., No. 3 Plymouth, L. Beach, L. Angeles	19- 4-12	3,743	P.B. 3,688
Richfield Oil, No. 10 Denni, Long Beach, Los Angeles	19- 4-12	3,590	O.S. drlg.
Richfield Oil, No. 5 Frye, Long Beach, Los Angeles	19- 4-12	4,540	cleaning out
Coastal Oil & Gas, No. 1 Signal, L. Beach, L. Angeles	19- 4-12	4,500	bailing
Clayton, G. L., No. 1 North Long Beach, Los Angeles	32- 3-12	5,164	sd. sh. drlg.
Union Oil, No. 100 Santa Fe Springs, Los Angeles Co.	6- 3-11	10,789	milling 7,295
Texas Co., No. 7-W Santa Fe Springs, Los Angeles Co.	6- 3-11	5,121	hd. sh. drlg.
Wales Pet., No. 1-H Monterey Park, Los Angeles Co.	26- 1-12	3,367	idle
Continental Oil, No. 40 Bixby, Seal Beach, Orange Co.	2- 5-12	473	sd. sh. drlg.
Wilshire Oil, No. 1-A Huntington, Orange Co.	2- 6-11	3,931	sd. sh. drlg.
Wilshire Oil, No. 6-B Huntington, Orange Co.	2- 6-11	4,692	sd. sh. drlg.
Tide Water A. O., No. 41 M.K., Huntington, Orange	2- 6-11	4,608	P.B. 4,364
Union Oil, No. 10 Brooks, Huntington, Orange Co.	34- 5-11	4,252	sd. sh. drlg.
Johnston Drlg., No. 1 Sunset Beach, Orange Co.	20- 5-11	1,961	sd. sh. drlg.
Shell Oil, No. 4-1 Columbia, Olinda, Orange Co.	9- 3-9	5,368	sd. sh. drlg.
Cox, M. A., No. 1 East Coyote, Orange Co.	15- 3-10	5,450	P.B. 3,150
Bartholomae Oil Co., No. 5 East Coyote, Orange Co.	22- 3-10	968	sd. sh. drlg.
Dolicia Oil, No. 3 A.U.W., East Coyote, Orange Co.	24- 3-10	4,089	P.B. 3,960
Tide Water A. O., No. 42 East Coyote, Orange Co.	22- 3-10	3,595	cleaning out
Standard Oil, No. 2-16 Kraemer, Richfield, Orange	29- 3-9	4,333	redrlg. 3,862
Union Oil, No. 14 Stern, Richfield, Orange Co.	33- 3-9	3,373	sd. sh. drlg.
Bachman Pet., No. 1 Yorba, Orange Co.	21- 3-9	1,340	sd. sh. drlg.
Signet Oil, No. 1 Yorba, Orange Co.	21- 3-9	1,947	cleaning out
West American Oil, No. 1 Tustin, Orange Co.	14- 5-9	6,070	Schist.
Shell Oil, No. 1-H Anaheim, Orange Co.	9- 4-10	3,121	sd. sh. drlg.

KANSAS

Week Ending August 14 (Descriptions are East unless marked otherwise)

Barber County

W. I. Southern, Inc., No. 1 Davis, SE SE NE sec. 24-34-15w. K.C. 4,215 ft.; set 8-in. 4,572 ft.; R.U.S.T.

Barton County

Armer & Vernon Oil & Gas Co. No. 1 Persons, SW SW SE sec. 7-17-13w. Spd. and S.D.

J. B. Hanna No. 1 Luce, SW cor. sec. 21-20-13w. Set 5-in. 3,414 ft.; T.D. 3,420 ft.

Helmerich & Payne et al No. 1 Sessler, SW SW SE sec. 29-20-1w. S.W. 3,423 ft., T.D.; P.B. 3,416 ft.

Sam Murphy No. 1 Beck, NE cor. sec. 17-17-12w. Sil. 3,355-68 ft.; running 5-in.

Phillips Pet. Co. No. 1 McClanahan, NE NE SE sec. 7-16-13w. Set 7-in. 3,363 ft.; R.U.S.T.

C. L. Price No. 1 Hammeke, NE NE SW sec. 12-18-12w. Sil. 3,415-27 ft.; 1,900 ft. O.I.H. and 5 B.W. in 1½ days.

Republic Nat. Gas Co. No. 1 Bloomer, NE NW NW sec. 14-17s-11w. Cored 3,321-26 ft.; run 7-in. csg.

Stanolind O. & G. Co. No. 1 Natl. Bank, SE SE SW sec. 36-16-13w. Cored 3,390-3,400 ft.; no shows.

Vickers Pet. Co. No. 1 Lucas, NW NW NE sec. 16-17-14w. Drlg. 2,345 ft.

Ralph Wixson et al No. 1 Buhrle, SE SE NE sec. 14-16-13w. Drlg. 265 ft.

Chase County

California-Illinois-Kansas Oil Co. No. 1 Hughes, SW NW SE sec. 13-22-9e. Drlg. 2,575 ft.

Chautauqua County

C. L. Brosius et al No. 1 Garrett, NW SW NW sec. 26-32-11. Miss. 1,770 ft.; drlg. 1,910 ft.

Robinson et al, No. 1 Foster, SW cor. sec. 6-33-12. Sil. 1,984-86 ft.; S.O.

C. R. Ross et al No. 1 Walker, NW NW SE sec. 5-33-11. Drlg. 1,500 ft.

S. H. Vineard No. 1 Hughes, NE NE SE sec. 13-32-12. S.D. 300 ft.

Cowley County

Lewis Prod. Co. No. 1 Feaster, SE NE SW sec. 36-32-5. Drlg. 2,000 ft.

National Ref. Co. No. 1 Schwantes, NW SW NE sec. 16-32-3e. Drlg. 1,800 ft.

Rex & Morris et al No. 1 Lanier, NE NE NW sec. 10-30-5e. Drlg. 2,125 ft.

E. B. Shawver No. 1 fee, NW NE SE sec. 3-30-4e. Drlg. 1,820 ft.

Ellis County

Billings No. 1 Smith, SE SE NW sec. 14-12-16w. Sil. 3,356 ft.; first oil 8,360-64 ft.; T.D. 3,370 ft.; fsg.

Brunson Drlg. Co. et al No. 1 Weisner, SE SW SE sec. 31-13-17w. U.R. 12-in. 1,240 ft.

Lario O. & R. Co. No. 1 Bell, NW NW NE sec. 8-12-18w. Run 12-in. 843 ft.

C. E. W. Skiles et al No. 1 Jensen, SW SE NE sec. 26-12-18w. Anhy. 1,355 ft.; set 10-in. 1,360 ft.

Vickers Pet. Co. et al No. 1 Parker, C N½ NE NW sec. 35-11-16w. Sil. 3,339 ft.; T.D. 3,395 ft.; D.&A.

Earl Wakefield et al No. 1 Burnett, NW NW NE sec. 1-11-18w. Anhy. 1,310 ft.; U.R. 6-in. 2,775 ft.

Western Kansas O. & R. Co. and Aylward Prod. Co. No. 1 Schmeidler, NW cor. sec. 22-12-17w. Drlg. 2,890 ft.

Winkler & Koch No. 1 Karlin, NW cor. sec. 13-12-18w. C.O. 576 ft.

Ellsworth County

Equity Gas Co. No. 1 Razoe, NE NE SE sec. 31-15-10w. Set 8-in. 2,260 ft.; S.D.

C. E. W. Skiles et al No. 1-A Sturn, SE SE SW sec. 31-17-9w. S.G. 2,930-35 ft.

Grant County

Columbian Fuel No. 1 Alderman, C SW sec. 18-29-35w. T.D. 2,715 ft.; 4,000,000 ft gas.; comp.

Panhandle Eastern Pipe Line Co. No. 1 Taggert, C sec. 11-30-37w. Set 7-in. 2,435 ft.; R.U.S.T.

Greenwood County

Ward McGinnis et al No. 1 Henly Estate, SW cor. sec. 25-25-9. T.D. 2,234 ft.; H. F.W.; P.B.; cmt. 6-in.

Western Kansas O. & R. Co. No. 1 Taylor, SE SE SW sec. 6-27-12. T.D. 1,987 ft.; P. 75 B. O. and 30 B.W. in 24 hrs.; comp.

Hamilton County

Denver Prod. & Ref. Co. No. 1 Porter, SW SW NE sec. 30-25-41w. Miss. 5,454 ft.; drlg. 6,011 ft.

Harper County

Magnolia Pet. Co. No. 1 Freeman, SE NW SW sec. 3-31-6w. Simp. dol. 4,690-95 ft.; fsg.

Harvey County

E. I. Shaffer et al No. 1 Epp, SE cor. sec. 15-23-3w. T.D. 3,915 ft.

Simpson & Noble et al No. 1 Pierce, SW SE NE sec. 25-22-2w. T.D. 3,620 ft.; D.&A.

Kearny County

J. L. Murphy No. 1 Masonic Home, C NW sec. 1-26-36w. Drlg. 1,490 ft.

Logan County

Morgan, Flynn, Cobb et al No. 1 McMullen, C NW sec. 9-13-37w. Drlg. 3,530 ft.

Lyon County

Arthur Sory No. 1 Byrd, SW SW SE sec. 32-21-11. T.D. 1,913 ft.; 200 ft. O.I.H.; shot.

Marion County

Hutchinson O. & G. Co. et al No. 1 Ehrmann, SE SE SW sec. 15-18-1e. Drlg. 2,100 ft.

Western Kansas O. & R. Co. et al No. 1 Suderman, SE SW NW sec. 22-20-2e. Drlg. 2,475 ft.

McPherson County

C. E. Ash Drlg. Co. No. 1, NE NE NW sec. 19-17-4w. Drlg. 405 ft.

Bradley Bros. No. 1 Barnholt, SW SW SE sec. 30-30-5w. Chat 3,292 ft.; T.D. 3,335 ft.; running 5-in. liner.

Fred C. Frank et al No. 1 Doles, SE NW NE sec. 12-19-1w. S.D. 2,323 ft.

Wamhoff et al No. 1 Nuse, SE NE SW sec. 18-18-4w. Drlg. 1,825 ft.

Mitchell County

Geo. Siedhoff et al No. 1 Greiss, SW SW SE sec. 16-8-10w. Set 5-in. 3,696 ft.; drlg. 3,725 ft.

Ness County

Jones & Lane No. 1 Page Milling Co., SW SE NW sec. 36-18-26w. Fsg. 1,040 ft.

Newton Dev. Co. No. 1 Tenny, NW NW SE sec. 19-18-25w. Inc. oil 4,400-02 ft.; 3,500 ft. O.I.H. at 4,406 ft.; S.D.

Osborne County

Fred C. Chaddox and Atlantic Ref. Co. No. 1 Slater, NE SW NE sec. 33-10-15w. Anhy. 1,225 ft.; U.R. 15-in. 1,240 ft.

Pratt County

Atlantic Ref. Co. et al No. 1 Runyon, SW NW NE sec. 11-27-13w. T.D. 4,310 ft.; to test.

Skelly Oil Co. et al No. 1 Adams, SE NW NE sec. 2-28-11w. Drlg. 2,140 ft.

Reno County

Carter Oil Co. et al No. 1 Bontrager, C E½ NE NE sec. 26-24-5w. T.D. 3,925 ft.; P.B. 3,735 ft.; D.&A.

Helmerich & Payne No. 1 Haines, SW cor. sec. 9-25-5w. Drlg. 2,932 ft.

Imo O. & G. Co. et al No. 1 Watkins, SE cor. sec. 14-22-7w. Chat 3,548 ft.; 100 ft. W.I.H.; S.D.

Pryor & Lockhart et al No. 1 Stuckey, NW SW SW sec. 31-25-5w. Anhy. 355 ft.; S.D. 1,767 ft.

Sam Schneider et al No. 1 Kroecker, NE cor. sec. 12-22-5w. Spd.

Rice County

Bell O. & G. Co. et al No. 1 Wilkins, NW NW NE sec. 23-21-9w. Simp. 3,591 ft.; Sil. 3,643 ft.; T.D. 3,662 ft.
Gerbrand-Pulse Oil & Drilling Co. No. 1 Wellman, SW cor. sec. 22-21-9w. Drlg. 910 ft.
Gillispie et al No. 1 Strong, NE NE NW sec. 9-18s-8w. R.U.
John Hanna et al No. 1 Marshall, NE NW NW sec. 30-18s-8w. S.D. 1,515 ft.
H. V. Holland et al No. 1 Brothers, SE cor. sec. 12-21-7w. K.C. 2,935 ft.; drlg. 3,260 ft.
W. E. Witt et al No. 1 Fair, NW SE SE sec. 4-22-8w. U.R. 8-in. 2,423 ft.

Rooks County

Brunson Drlg. Co. et al No. 1 Casey, SE SE NE sec. 22-9s-16w. Set 5-in. 3,555 ft.; Cong. 3,570 ft.; drlg. 3,647 ft.
Graham et al No. 1 Fike, SW cor. sec. 9-9-17w. T.D. 3,326 ft.; p. 39 B.O. and 48 B.W. in 8 hrs.
J. H. Lester No. 1 Methene, SE SE NE sec. 29-10-20w. Fsg. 3,825 ft.

Rush County

Duwe & Brouk No. 1 Lebsack, SE SE NE sec. 13-16-16w. Sil. 3,492-95 ft.; 1,500 ft. sulfur water in hole in 2½ hrs.; T.D. 3,512 ft.; S.D.O.
Earl Wakefield et al No. 1 Zimmerman, SE SE SW sec. 7-16-18w. Drlg. 555 ft.
Westgate-Greenland Oil Co. No. 1 Hagerman, NE cor. sec. 20-19-16w. Drlg. 2,050 ft.

Russell County

Boyle & Grossman No. 1 Deines, SE SE SW sec. 36-15-15w. Sil. 3,451 ft.; H.F.W. 3,471-76 ft.; T.D. 3,179 ft.
Boyle & Grossman No. 1 Steinert Est., NE SE NW sec. 34-15-15w. Sil. 3,442 ft.; H.F.W. 3,455-60 ft., T.D.; D.&A.
Shell Pet. Corp. No. 1 Hatt, SE cor. sec. 35-15-14w. Cg. 3,298 ft.
Winkler & Koch No. 1 Jones, SE SE NW sec. 22-14-13w. Sil. 3,180 ft.; S.D.O.

Sedgwick County

Home Stake Royalty Co. No. 1 McCormick, SW SW NW sec. 23-25-3w. Set 10-in. 500 ft.; W.O.C.
Roxana Drlg. Co. et al No. 1 Woodman, SW NW SW sec. 26-26-1w. S.D. 2,469 ft.
E. B. Shawver No. 1 Furman, SW NE SE sec. 24-29-3w. H.F.W. 3,825-35 ft.; drlg. 3,881 ft.
W. G. Talbott et al No. 1 Downs Est., SE SE NW sec. 32-28-2e. Drlg. 480 ft.
Union O. & R. Co. et al No. 1 Howell, SW cor. sec. 6-29-1e. Drlg. 575 ft.

Stafford County

Newman & Winemiller No. 1 Sittner, NE cor. sec. 33-21-12w. Set 7-in. 3,360 ft.; R.U.S.T.
Stanolind O. & G. Co. No. 1 Francis, NE NE NW sec. 26-22-13w. T.D. 3,846 ft.; D.&A.
Stanolind O. & G. Co. et al No. 1 Hartnett, NW NW NE sec. 23-24-11w. Anhy. 820 ft.; drlg. 3,065 ft.

Stevens County

Kuhn Bros. et al No. 1 Youngren, SE SE NW sec. 1-32-39w. Set 10-in. 509 ft.; W.O.C.

Sumner County

Cities Service Oil Co. No. 1 McCoy, SE SW sec. 11-35-2e. Spd.
Douglass & Gear No. 1 Strickler, SW NW NE sec. 30-32-1w. K.C. 3,215 ft.; drlg. 3,650 ft.
W. M. McKnab No. 1 Blair, SW cor. sec. 7-30-1e. U.R. 12-in. 1,387 ft.

Trego County

Phillips Pet. Co. No. 1 Trego, C SE SW sec. 14-12-23w. Drlg. 3,475 ft.
W. I. Southern, Inc., No. 1 Latimer, NW NW SE sec. 19-15-22w. T.D. 4,853 ft.; D.&A.
F. L. Thorn et al No. 1 Koeppen, SE SE SW sec. 31-14-24w. Drlg. 3,831 ft.

Woodson County

M. B. Allen No. 1 Flack, NE NE NW sec. 1-26-14. Sd. 1,313-42 ft.; T.D. 2,300,000 ft. gas.
Diller Oil Co. No. 1 Draper, NE NW sec. 10-24-17e. Several hundred ft. O. I.H. at 1,206 ft., T.D., in Mississippi lime.
Lilly et al No. 1 Wall, SW SE SE sec. 25-25-13. Drlg. 1,458 ft.
Morris et al No. 1 Koening, SE SE NW sec. 35-24-15. H.F.W. 1,458 ft.; S.D.O.
Fred Rapp No. 1 Houghland, NW NW SE sec. 2-25-15. S.D. 1,400 ft.

SOUTHERN OKLAHOMA

Carter County

C. F. Dillingham No. 1 Evans, NW NW SW sec. 12-1s-3w. Drlg. 1,900 ft.

Coal County

Carter Oil Co. No. 1 Claytor, C W½ NE SW sec. 27-2n-9e. Drlg. 4,320 ft.
Phillips Pet. Co. No. 1 Beck, SE SW SW sec. 6-1n-9e. Drlg. 1,190 ft.

Comanche County

M. J. Andrichak No. 1 Korthouse, NW NE SW sec. 35-2n-10w. Drlg. 380 ft.
Frank Scott No. 1-A Kuntz, SE NE SE sec. 21-4n-11w. T.D. 2,793 ft.; S.D.

Jackson County

Ace Gutowsky No. 1 Booker, NW cor. sec. 33-2n-18w. T.D. 580 ft.; S.D.
Ace Gutowsky No. 1 Howard, NE SW NW sec. 10-3n-19w. T.D. 950 ft.; fsg.
E. L. Lippert et al No. 1 Miller, NW cor. sec. 4-2n-18w. Drlg. 83 ft.

Johnston County

Patton et al No. 1 McCrummins, C SW SW Pea-Se, SE SE NE sec. 24-11-4. Dol. 4,853-86 ft., T.D.; swb. 210 B.O., accumulated, in 20 hrs.
Roy S. Nash et al No. 1 Miller, C N½ NE SE sec. 29-6-3e. Cored 3,816-34 ft.; rec. 10-ft. line.
British-American Oil Co. No. 1 Ramsey, SE SE NE sec. 27-6-4. Set 7-in. 3,600 ft.; T.D. 3,609 ft.; drlg. plugs.

Seminole County

Atlantic Ref. Co. and Gulf Oil Corp. No. 1 Decker, SW cor. sec. 32-11-6e. Cd. 4,367-68 ft.; odor gas.
Gillespie & Moore No. 1 Gaines, NE SW SW sec. 20-6n-7e. Cg. 2,790 ft.
E. W. Jones et al No. 1 Belford, NE SE NE sec. 9-9-8. Drlg. 2,485 ft.
Stanolind O. & G. Co. and Amerada Pet. Corp. No. 1 Salina, SE NE NW sec. 4-5-6. T.D. 3,317 ft.; set 7-in. 3,184 ft.; W.O.C.

Washita County

John Koberg No. 1 Harms, NW NW NE sec. 6-10-16w. Drlg. 4,110 ft.

OKLAHOMA

Week Ending August 14

NORTHERN OKLAHOMA

Adair County

B. L. Maddox No. 1 Penn Mutual, C S half NE NW sec. 5-16-24. Drlg. 215 ft.

Beckham County

Bud Lewis No. 1-A Douglas C SE NE sec. 21-8n-26w. Drlg. 1,785 ft.
Mid-American Oil Co. No. 1-A Biscoe, SW cor. sec. 28-8-22w. T.D. 2,200 ft.; S.D. for wtr.

Caddo County

Clyde Becker et al No. 1 Pharris, SE SE NW sec. 24-6-12w. T.D. 6,235 ft.; S.D. for water.

Cleveland County

W. R. Hollenbeck No. 1 Norman, NW NW NE sec. 17-9-2w. T.D. 7,178 ft.; P.B. and drlg. by at 5,672 ft.
Hollenbeck et al No. 1 Ward, SW SE NE sec. 30-7-1e. Drlg. 4,153 ft.

Creek County

L. B. Jackson No. 1 Alberty, NE NE NW sec. 25-18-9. T.D. 1,350 ft.; U.R.
M. W. Mosier et al No. 1 Holcomb, SE SW NW sec. 19-18-8. Burgess 3,005 ft.; T.D. 3,007 ft.; rep. boiler.

Garvin County

Carter Oil Co. No. 1 Potts, C E½ SE NW sec. 36-1n-3w. T.D. 1,415 ft.; taking straight-hole test.
B. C. D. Edwards No. 1 Clark, NE cor. sec. 16-3n-3e. Drlg. 900 ft.

Grady County

Gulf Oil Corp. No. 1 Thomas, SW NW NW sec. 14-4-5w. T.D. 6,249 ft.; fsg.

Grant County

Carter Oil Co. et al No. 1 Crisman, C W½ SW NW sec. 16-25-3w. T.D. 5,403 ft.; D.S.T. filled 330 ft. with oil and 90 ft. mud in 20 minutes.
Carter Oil Co. et al No. 1 Kolarik, NW SW sec. 4-26-5w. T.D. 5,852 ft.; D.&A.

Haskell County

Continental Oil Co. No. 1 Ferguson, SW SE NE sec. 33-8-20. Drlg. 6,032 ft.

Hughes County

W. O. Allen No. 1 Barnard, SW cor. sec. 24-8-8. Wilcox 4,260 ft.; T.D. 4,274 ft.; P.B. to 3,423 ft.; tstg.
Burke-Greis Oil Co. No. 1 Rhea, SW SW SE sec. 14-10-9. T.D. 1,780 ft.; fsg.
Carter Oil Co. No. 1 Hamilton, C W½ NE SW sec. 33-4-9. T.D. 6,172 ft.; P.B. 5,989 ft.; deepened to 5,994 ft.; acd.; avg. 98 B.O. and 10 B.W. daily; to perf. csg.
E. H. Moore, inc., No. 1 Buck, NW SW SW sec. 21-8-10. T.D. 3,301 ft.; C.O.
Moroney & Healey No. 1 Field, C NW SW sec. 11-9-11. T.D. 3,476 ft.; est. 2,500,000 ft. gas.
Texas Co. No. 1 Cox, NE NW NW sec. 23-9-8. Misner 4,072 ft.; T.D. 4,077½ ft.; to deepen.

Kay County

Black Gold Oil Co. No. 2 Cooley, SW cor. sec. 25-28-4e. T.D. 1,920 ft.; U.R. 6-in. at 1,720 ft.

Kiowa County

Hughes & Reese No. 1 Fultz, SE cor. sec. 10-6-18w. T.D. 600 ft.; S.D. for csg.
Kiowa Oil Corp. No. 1 Finger, C SW NE sec. 4-6-20w. T.D. 1,050 ft.; fsg.

Latimer County

Clark Drlg. Co. et al No. 1 Wilson, C SE SE sec. 15-5-18. T.D. 6,515 ft. in Atoka; P.B. 3,820 ft.; perf. 2,720-2,970 ft.; blew out; well killed.

Lincoln County

Cimarron Oil Corp. No. 1 Ornor, C SW SE sec. 31-17-2e. S.D. for water; T.D. 4,324 ft.

Logan County

Shell Pet. Corp. et al No. 1 Waddle, SW SE NW sec. 36-15-4w. Drlg. 6,259 ft.
Sunray Oil Co. and Olson Drlg. Co. No. 1 Canning, SW SW NE sec. 31-17-1w. Spudded.

Noble County

Herndon Drlg. Co. No. 1 Baggett, SE cor. sec. 13-21-3e. Drlg. 4,044 ft.
Phillips Pet. Co. No. 1-A Neil, NE cor. sec. 15-23-2w. Arbuckle 5,025 ft.; set 5⅛-in. 5,034 ft.; T.D. 5,200 ft.; comp. as salt water disposal well.

Okfuskee County

F. W. Merrick No. 1 Mackey, NE NE SW sec. 29-11-10. T.D. 2,045 ft. in dry sand.
Riverland Oil Co. No. 1 Board, NE NW SE sec. 10-13-10. Set 6-in. 2,788 ft.; T.D. 2,840 ft.

Oklahoma County

Frank Buttram et al No. 1 Cole, NW cor. sec. 16-14-1e. Drlg. 3,665 ft.

Pontotoc County

Boettcher O. & G. Co. No. 1 Cann, SE NW NE sec. 25-4n-7e. T.D. 4,347 ft.; fsg.
Kerlyn Oil Co. No. 1 Pratt, SW SE NE sec. 6-4-4e. T.D. 621 ft.; U.R.
Norbla Oil Co. No. 1 McBride, NE NE SW sec. 10-2n-5e. Drlg. 250 ft.
Papoose Oil Co. et al No. 1 Jones, NW SE NW sec. 2-4-5. Viola 2,595 ft.; T.D. 2,840 ft.; run Schlumberger; S.D.O.
Roodhouse et al No. 1 Booth, SE NW SE sec. 20-2-6. T.D. 4,966 ft.; P.B. 4,397 ft.; P. 73 B.D. aver. 2 days; flowed 60 B.O. in 1 hr. and died.
Southern Oil Co. No. 1 Young, NE NE SE sec. 17-3-7. T.D. 2,380 ft.; sulfur water; D.&A.
Union Dev. Co. No. 1 Abbott, SW NW NE sec. 34-3-6. Drlg. 3,055 ft.

Pottawatomie County

Atlantic Ref. Co. No. 1 Dooley, SE SE SW sec. 9-11-5. Set 7-in. 4,917 ft.; T.D. 4,919 ft.; P.B. 4,770 ft.; bailing.
Mid-Continent Pet. Corp. No. 1 Ne-Thah-NE sec. 16-1s-6e. S.D. 1,165 ft.
W. T. Sheidon No. 1 Chapman, C NW NW sec. 26-4s-6e. Set 12½-in. csg. 82 ft.

Love County

Sinclair Prairie Oil Co. No. 1 Stockton, SE SE SW sec. 26-6s-2w. T.D. 8,583 ft.; P.B. 6,927 ft. flows 50 to 57 bbls. oil at 4 to 5 days intervals; comp.

McCurtain County

Wilcox O. & G. Co. No. 1 Newman, SW SW SE sec. 30-7s-23e. T.D. 1,380 ft.; H.F.W.; D.&A.

Marshall County

Paul Robb et al No. 1 Vittitoe, C NE SE sec. 11-5s-4e. O.W.D.D.; C.O. at 720 ft.
Neff-Godfrey No. 1 Chapman, SW SE SW sec. 36-4s-4e. Drlg. 2,245 ft.

Murray County

O. O. Owens No. 1 Fryer, NE SE NE sec. 34-1s-3e. T.D. 2,574 ft.; 1,400 ft. W.I.H.
Power Oil Co. No. 1 Lancaster Trust, C SW NE sec. 10-1-2e. T.D. 3,714 ft.; fsg.

Pushmataha County

Erle Halliburton et al No. 1 Bagwell, SW NE NE sec. 30-3s-15e. T.D. 3,650 ft.; crooked hole; P.B. and W.O.C.; rng. Eastman Sur.

Stephens County

Carter Oil Co. No. 1 Harley, C NE NE sec. 24-2s-4w. T.D. 8,157 ft.; set 7-in. 7,475 ft.; W.O.C.
Jack Cohen No. 1 Pierce, NE NE NW sec. 24-2s-6w. Drlg. 770 ft.
Coline Oil Co. No. 1 Johnson, C SW SE SE NE sec. 1-2n-8w. Drlg. 8,625 ft.
Ed Parsons No. 1 Blake, C SW NW sec. 22-2n-8w. Set 9-in. 4,947 ft.; T.D. 4,966 ft.; W.O.C.

Tillman County

Cavens et al No. 1 Southerland, SW SW NW sec. 35-4s-16w. T.D. 44 ft.; S.D.
Indian Territory Ill. Oil Co. No. 1 Graham, SE SE NE sec. 1-3s-19w. Drlg. 1,816 ft.
Magnolia Pet. Co. No. 1 Brown, SW SE NE sec. 21-3s-18w. Canyon 3,480 ft.; Strawn 4,335 ft.; drlg. 6,145 ft.
Tom Walker No. 1 Bowman, SW SW NW sec. 10-4s-17w. T.D. 20 ft.; S.D.

ARKANSAS

Ashley County

Phillips Pet. Co. No. 1 Godfrey, C S½ SW NW sec. 18-17-9. Drlg. 4,783 ft.

Clark County

Carter & Burdick No. 1 Ozan Lbr. Co., NE NE NW sec. 25-9-19. S.D. 1,645 ft.

Columbia County

Robt. Keene et al No. 1 Runyon, NW SE NE sec. 1-16s-21w. S.D. 700 ft.
Standard of La. No. 1 J. P. McKean, SW sec. 8-16s-22w. Drlg. 3,984 ft.

Crittendon County

Stanley Oil Corp. No. 1 Danner, sec. 18-8n-93. Cla. S.O. 1,316-27 ft.; S.D.; W.O.; T.D. 1,327 ft.

Drew County

Sloan Wells et al No. 1 R. L. Hardy, SE SE NW sec. 3-14s-7w. Drk.

Hempstead County

H. D. Easton et al No. 1 R. M. LaGrone, sec. 5-12-26. Drlg. 1,635 ft.
Shephard & Todd et al No. 1 Smith, NW SW NE sec. 11-11-25. S.D. 1,940 ft.; (cor. depth).

Lonoke County

Frank F. Silver No. 2 Chambers, SW NE NW sec. 17-2n-7w. 7-in. cmtd. 1,487 ft.; prep. test O.S.; T.D. 1,500 ft.

Miller County—Rodessa

Anding & Bird No. 1 B. A. Skipper, SW NW SW sec. 11-20-28. Drlg. 5,530 ft.
F. W. Burford No. 1 A. A. Capps, W½ sec. 14-20-28. 7-in. 5,975 ft.; T.D. 6,069 ft.; tstg.
F. W. Burford No. 1 Easton, E½ SW SE sec. 11-20-28. 7-in. 5,975 ft.; T.D. 6,060 ft.; tstg.
F. W. Burford No. 1-B Gerald, NE cor. sec. 15-20-28. 7-in. 5,973 ft.; T.D. 6,050 ft.; tstg.
F. W. Burford No. 1 Perdue, SE NE SE sec. 11-20-28. Comp.; flw. 754 B.P.D.; T.D. 6,113 ft.
W. M. Layton No. 1 Terry, NW cor. sec. 14-20-28. 7-in. 6,012 ft.; T.D. 6,058 ft.; W.O.C.S.
McClanahan et al No. 2 A. A. Capps, SW sec. 11-20-28. Drlg. 5,666 ft.
McClanahan et al No. 3 Capps, sec. 11-20-28. Drlg. 4,697 ft.
McClanahan No. 1 Larey, sec. 11-20-28. Drlg. 4,150 ft.
Roberts Drlg. Co. No. 1 W. W. Capps, SE NW SE sec. 10-20-28. Drlg. 5,529 ft.

Monroe County

J. H. Coker No. 1 McClain, NE NW sec 15-4n-2w. T.D. 2,527 ft.; D.&A.

Nevada County

Benedum & Trees No. 1-A C. C. Fincher, NW NW NE sec. 10-14-20. 7-in. 2,138 ft.; D.S.T. 500 ft.; oil; T.D. 2,141 ft.
W. E. Lekey, Tr., No. 1 Purifey, sec. 17-11-20. Drlg. 1,380 ft.

Ouachita County

Copenhaver Oil Corp. No. 1 J. E. Evans sec. 20-11-19. T.D. 1,728 ft.; wash to bottom.
Tide Water-Seaboard Oil Co. No. 1 S. A. Graves Est., NW SE NW sec. 33-13-18. Drlg. 2,914 ft.

Pike County

Bruce E. Wallace and W. E. Neill No. 1 Tilyew, SE SE SE sec. 26-8-24. T.D. 342 ft.; S.D.

Pulaski County

A. L. Kitselman No. 2 A. L. Kitselman, Jr., SE SE SW sec. 2-1s-13e. Drlg. 1,002 ft.; hd. blk. rk.

St. Francis County

Manning & Martin No. 1 R. C. Gregg, sec. 20-5n-5e. S.D. 3,540 ft.

Union County—Schuler

E. M. Jones et al No. 1 First Natl. Bank NW NE NE sec. 19-18-17. 7-in. 6,347 ft.; T.D. 6,351 ft.
E. M. Jones et al No. 1 K. Gallagher, NW SW sec. 19-18-17. T.D. 5,929 ft.; T.A.
E. M. Jones et al No. 1 Marine Oil Co. fee, NW SW SE sec. 17-18-17. Drlg. 5,861 ft. as deep test.
Lion Oil Rfg. Co. No. A-1 M. D. Justiss,

McGREGOR

85,000 Working Barrels in Use

OUR working barrels have been continually improved for 30 years. We have worked with producers in developing many special features for pumping.

We will be glad to try to help you out of your difficulties.

McGREGOR WORKING BARREL COMPANY

Bradford, Pa., U.S.A.

NE NW NE sec. 19-18-17. T.D. 6,015 ft.; rng. Schlumberger.
Lion Oil Ref. Co. No. 1-A Edna Morgan, O.W.D.D. T.D. 5,550 ft.; R.U.
Lion Oil Ref. Co. No. 3-A Edna Morgan SE Lot 1, SW sec. 18-18-17. 7-in. cmtd. 5,797 ft., T.D.
Phillips Pet. Co. No. 1 E. Gan, SW SE NE sec. 18-18-17. T.D. 6,062 ft.; T.A.
Phillips Pet Co. No. 2 E. Gan, SE SW NE sec. 18-18-17. 7-in. cmtd. 6,058 ft.; W.O.C.S.
Phillips Pet. Co. No. 1 M. Justiss, SE Lot 6, NW sec. 18-18-17. T.D. 6,142 ft.; P.B. and tstg.
Phillips Pet. Co. No. 2 M. Justiss, NE Lot 2, SW sec. 18-18-17. T.D. 6,087 ft.; tstg.
Sklar Oil Corp. No. 1 O. G. Murphy, SE NW SW sec. 24-17-16. T.D. 2,148 ft.; W.O.S.R.
Alice Sydney Oil Co. No. 2 Morgan, sec 18-18-17. 7-in. cmtd. 6,287 ft.; T.D. 6,307 ft.
W. D. Wingfield et al No. 1 Sou. Kraft Corp., SW NE sec. 18-19-14. Cg. 3,722 ft

LOUISIANA

NORTH LOUISIANA PROVEN

Caddo—Rodessa

Blackwell O. & G. Co. No. 3 Neugent, sec. 8-23-16. 5-in. cmtd. 6,604 ft.; T.D. 6,750 ft.; acd. and tstg.
Clark Oil Corp. No. 2-A Sharp, SW SE sec. 4-23-16. Reperf. and tstg.
Holcomb & Thomasson No. 1 Dillon, SE sec. 4-23-16. Drlg. 5,620 ft.
Holcomb & Thomasson No. 1 Smith, SE sec. 4-23-16. Drlg. 2,700 ft.
Magnolia Pet. Co. No. 1 D. F. Barr, NW S½ sec. 29-23-16. Drlg. 5,812 ft.
R. W. Norton No. 1 Payne, C SE SE sec. 27-23-16. P.B. 8,670 ft. and tstg.
R. W. Norton No. 13 Starke, NW sec. 17-23-16. 7-in. cmtd. 5,950 ft.; T.D. 6,000 ft.; W.O.C.S.
R. W. Norton No. 14 Starke, C sec. 16-23-16. Drlg. 3,436 ft.
Roberts Drlg. Co. No. 1 E. G. Finley, NW sec. 1-23-16. Drlg. 5,396 ft.
Standard Oil of La. No. 2 McCoy, sec. 10-23-16. Drlg. 5,296 ft.
Standard Oil of La. No. 2 S. G. Zylks, NW NW SW sec. 10-23-16. Drlg. 4,839 ft.
Surf Oil Co, No. 1 Allison, NE sec. 8-23-16. Fsg. for swab; T.D. 6,050 ft.

N. LOUISIANA WILDCATS

Bienville Parish

DeSota O. & G. Co. No. 1 Ashley, SW SE sec. 15-16-10w. Tstg.
H. L. Hunt and Seaboard Oil Co. No. 1 Commercial Real Estate Corp., NE NW sec. 3-16-6. 13-in. cmtd. 429 ft.
Lide & Greer No. 2 Davis, NW NE sec. 12-16-5w. Drlg. 7,197 ft.
McDowell et al No. 1 Locke, NE cor. sec. 9-15-10. Fsg. 2,921 ft.

Bossier Parish

Arkansas-La. Gas Co. No. 2 T. Wilson, NW SW sec. 8-17-11. Drlg. 4,902 ft.
Triangle Drlg. Co. No. 1-A Schuler Est., SE NW sec. 13-17-12. R.U.
United Gas No. 2-A A. J. Murff, NE sec. 19-17-11. Drlg. 4,114 ft.
United Gas No. 1-B A. J. Murff, SW sec. 17-17-11. Drlg. 4,325 ft.

Caddo Parish

C. L. Ferguson et al No. 1 Cooney, sec. 35-21-16. W.O.S.R.
W. J. Hunter et al No. 1 Stoer, NW SW NE sec. 10-15-15. P.B. and tstg.; T.D. 5,413 ft.; S.G.; perf. 5,100-20 ft.; tstg.
Killam & Smith No. 3 J. J. Hart, SW sec. 29-21-16. T.D. 1,065 ft.; W.O.
La. Oil Prod. Co. No. 9-B Muslow, sec. 4-20-15. Comp.; flw. 55 B.P.D.; T.D. 1,600 ft.
Frank Perkins No. 1 Stiles, SW SW sec. 33-21-16. W.O.S.R.; T.D. 945 ft.
Frank Perkins No. 3 Stiles, SW sec. 33-21-16. R.U.
Prairie River Synd. No. 1 Hutchinson, SW NW sec. 15-15-12. Drlg. 8,345 ft.

LEGAL

U. S. Department of the Interior, General Land Office, Washington, D. C. Notice is hereby given that Unit No. 3, embracing NW¼ of SE¼ Sec. 5, T. 23 N., R. 15 W., 28.93 acres; Unit No. 4, SW¼ of NE¼ Sec. 2, T. 23 N., R. 16 W., 27.96 acres; Unit No. 5, W½ of E½, NE¼ of NW¼ Sec. 3, T. 23 N., R. 16 W., 138.13 acres; and Unit No. 6, SW¼ of SE¼ Sec. 9, T. 23 N., R. 16 W., 39.95 acres, in the Rodessa Oil and Gas Field, Caddo Parish, Louisiana, subject to consolidation if awarded to same bidder, are offered to the responsible qualified bidders of the highest bonus per acre under section 17 of the leasing act of February 25, 1920 (41 Stat. 437), as amended by the act of August 21, 1935 (49 Stat. 674), at the royalty rate scale in the lease form shown in Circular 1386, at a sale to be held in the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 12:00 noon, on September 3, 1937. The successful bidder must deposit on the day of the sale a certified check on a solvent bank, or cash, for one-fifth of the amount of each bid and file the showing of qualifications to receive a lease required by section 7 of General Land Office Circular 1386. The remaining four-fifths, together with the annual rental in advance at the rate of $1 per acre must be paid prior to the issuance of the lease. The bidders are warned against violation of the provisions of section 59 of the United States Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids at the discretion of the Secretary of the Interior. Fred W. Johnson, Commissioner.

J. J. Shulman No. 1 Bickham, NE sec. 28-21-5. T.D. 1,645 ft.; acd.; W.O.C.S.
Surf Oil Co. No. 1 Hyman, SE sec. 10-20-15. T.D. 2,210 ft.; D.&A.
Surf Maji Oil Co. No. 1 Satellete, NE SE sec. 10-20-15. R.U.

Claiborne Parish

Atlantic Ref. Co. No. 3 King, E½ SE SE sec. 35-21-5. Drlg. 5,183 ft.
Atlantic Ref. Co. No. 4 F. B. King, W½ SE SE sec. 35-21-5. Drlg.
Atlantic Ref. Co. No. 2 Tatum, S½ NE SE sec. 31-21-4. Comp.; flw. 28 B.P.H.; T.D. 5,277 ft.
Atlantic Ref. Co. No. 1-A Tatum, N½ NE SE sec. 31-21-4. R.U.
Atlantic Ref. Co. No. 1-B Tatum, W½ NW SW sec. 32-21-4. R.U.
Gulf Ref. Co. No. 1 S. E. Tatum, SW cor. sec. 32-21-4. 7-in. cmtd. 5,277 ft.; T.D. 5,303 ft.
Harry Hanbury No. 1-C Vaughn, S½ SE SE sec. 25-21-5. Drlg. 1,700 ft.
Harry Hanbury No. 1-D Vaughn, S½ SW SW sec. 30-21-4. Drlg. 900 ft.
Hollifield & McFarland No. 3 M. Patton, E½ NW SE sec. 31-21-4. Rng. 7-in.; T.D. 5,293 ft.
Love Bros. No. 2 J. J. Henry, N½ NE NE sec. 31-21-4. Drlg. 2,020 ft.
Lyons & Neely No. 2 J. Bean, E½ SE NE sec. 31-21-4. Drlg. 2,400 ft.
Magnolia Pet. Co. No. 4 English, N½ SW NE sec. 31-21-4. Comp.; flw. 35 B.P.H.; T.D. 5,290 ft.
Magnolia Pet. Co. No. 5 English, N½ NE NW sec. 31-21-4. Comp.; flw. 40 B.P.H.; T.D. 5,245 ft.
Magnolia Pet. Co. No. 3 H. E. Patton, W½ SW SW sec. 36-21-5. 7-in. 5,276 ft.; T.D. 5,288 ft.; tstg.
Olson Drlg. Co. No. 1 J. T. Bean, S½ NW NW sec. 32-21-4. Rng. 7-in.; T.D. 5,154 ft.
Olson Drlg. Co. No. 1 T. F. Patton, SW C sec. 30-21-4. Drlg. 4,459 ft.
Olson Drlg. Co. No. 1-B T. F. Patton, S½ SE SW sec. 29-21-4. R.U.
Scouts Oil Co. No. 1 E. C. English, S½ SW SE sec. 30-21-4. 10-in. cmtd. 830 ft.
Sells Prod. Co. No. 1 J. Bean, W½ SW NW sec. 32-21-4. Drlg. 4,925 ft.
Sells Pet. Co. No. 2 W. Jones, E½ SE SE sec. 31-21-4. Drlg. 2,000 ft.
Sloan & Zook Co. No. 1 Patton Est., NE NW sec. 1-20-5. Drlg. 2,528 ft.
Shreveport Oil Corp. No. 1 Edwards, NE sec. 16-20-5w. T.D. 5,411 ft.; tstg. S.O.; acidized.
Standard Oil of La. No. 3 F. B. King, NW SE sec. 35-21-5. Drlg. 4,772 ft.
J. C. Tippett No. 2 Aycock, S½ NE SE sec. 1-20-5. 12-in. 773 ft.
United Gas No. 2 Brownfield, 660 ft. N and E, SW NW sec. 5-19-5w. Drlg. 5,378 ft.
United Gas et al No. 1 J. W. Stevenson, SE SW SE sec. 6-19-5. O.W.D.D.; T.D. 4,323 ft.; R.U.
G. H. Vaughn No. 1 E. B. King, S½ SE SE sec. 30-21-4. Drlg. 100 ft.

Concordia Parish

Coastal Mineral & Dev. Co. No. 1 Winsten, sec. 23-7-9e. T.D. 1,320 ft.; S.O.; S.D.; W.O.

De Soto Parish

Kennedy & Britewell No. 1 Redding, SE NE sec. 35-11-11. Drlg. 2,485 ft.
Lyons & Neely No. 1 J. P. Brown, sec. 16-10-11. Drlg. 2,320 ft.
J. F. McMannan No. 1 Cook Ld. Co., SE sec. 16-16-11. Drlg. 3,171 ft.
Paul Miller No. 1 R. A. Bafron, sec. 36-11-11. T.D. 2,945 ft.; tstg.
Pullman Oil Co. No. 3 Ramsey, SE NE NW sec. 36-11-11. T.D. 2,942 ft.; tstg.

Franklin Parish

Tensas Delta Oil Corp. No. 1 Woodland, NE sec. 22-11-9. R.U.

LaSalle Parish

Petroleum Heat & Power Corp. No. 1 P. S. Gahoran, SW NW sec. 25-10-1e. 6-in. cmtd. 1,458 ft.
Placid Oil Co. No. 4 La. Cen. Lbr. Co., SW sec. 15-10-3e. R.U.

Lincoln Parish

J. E. Burford, Sr., No. 1 Hanna, SE SW SE sec 34-18-4w. Drlg. 2,086 ft.
Crown Central Pet. Co. No. 1 T. F. Patton, N½ SE NW sec. 6-20-4. Comp.; flw. 36 B.P.H.; T.D. 5,316 ft.
Hollifield & McFarland No. 1 J. D. Caruthers, S½ NE NW sec. 6-20-6. Drlg. 3,925 ft.
T. L. James No. 1 J. J. Spence, SW NE sec. 11-17-4. Drlg. 4,742 ft.
W. F. Lacey et al No. 1 Laura Canathers, W½ NW NE sec. 6-20-4. T.D. 5,264 ft.; W.O.C.S.
Ludel Oil Corp. No. 1 Gill, NE NE NW sec. 36-20-2w. R.U.
Lyons & Neely No. 1 W. H. Patton, N½ SW NW sec. 6-20-4. Drlg. 4,160 ft.
Red Iron Drlg. Co. No. 1 Aycock, NW sec. 6-20-4. Comp.; flw. 50 B.P.H.; T.D. 5,382 ft.

Red River Parish

Gulf Ref. Co. No. 28 L. E. Kennedy, NW sec. 25-13-11. R.U.
W. J. Hunter No. 2 Long Bell Lbr. Co., SW NW sec. 20-19-9. Drlg. 1,700 ft.
I. C. Prine No. 1 Haynes, SW sec. 20-13-10. T.D. 2,550 ft.; fsg. for csg.
Yandell & Rogers No. 4 Caspari, SW SE SW sec. 27-13-11 Rng. 4-in. lnr.; T.D. 2,462 ft.

Sabine Parish

Ellis Prod. Co. No. 1 Wright, NW SW sec. 4-5-12. Drlg. 2,635 ft.
Kirk-Green-Way Inc. No. 1 Whitney Corp., NW NE sec. 8-9-13. T.D. 8,510 ft.; P.B. to test.

Webster Parish

Magnolia Pet. No. 6 Ira Cox, NE NE SE sec. 23-21-10. Comp.; flw. 600 B.P.D.; T.D. 8,125 ft.
Magnolia Pet. Co. No. 2 A. J. McCook, SW sec. 22-21-10. Drlg. 7,870 ft.
Magnolia Pet. Co. No. 2 J. M. Mixon, NW SW sec. 22-21-10. Drk.
Ohio Oil Co. No. 47 Bodcaw Acct. 2, SW SE sec. 15-21-10. Drlg. 6,459 ft.
Ohio No. 1 S. P. D. Covle and W. Cox, SW SW SE sec. 23-21-10. Drlg. 3,145 ft.
Ohio Oil No. 1 T. Crichton, Acct. No. 2, SE NE sec. 21-21-10. Drlg. 6,458 ft.
Ohio No. 7-B R. L. Holloway, 586 ft. N. 756 ft. E line, sec. 23-21-10. Drlg. 6,337 ft.
A. G. Oliphant et al No. 1 Banks, NE NE sec. 34-21-10. Drlg. 5,780 ft.
Ohio Oil Co. No. 1 D. W. Merritt, SW cor. sec. 14-21-10. 13-in. cmtd. 819 ft.
Standard Oil Co. of La. No. 7 Mrs. M. F. Davis, NE NE NW sec. 23-21-10. 13-in. cmtd. 632 ft.
Standard Oil Co. of La. No. 2-B Mrs. M. E. Gray, NE NE NW sec. 26-21-10. Drlg. 1,090 ft.
Standard Oil of La. No. 1 E. L. Stewart, SE SE SE sec. 32-21-10. Drlg. 8,590 ft.
Woodley Pet. Co. No. A-2 L. C. Cox, SW NE sec. 22-21-10. 7-in. cmtd. 8,254 ft.; T.D. 8,285 ft.

Winn Parish

Georgetown Oil Co. No. 1 Tremont, sec. 19-10-1e. Cg. 1,613 ft.
G. W. Zeigen No. 11 La. Cen. Lbr. Co., NW sec. 11-13-1e. Drlg. 1,550 ft.

SOUTH LOUISIANA FIELDS

Abbeville—Vermilion Parish

Continental Oil Co. No. 1 Brookshire, sec. 66-12s-3e. Drlg. sh. 11,131 ft.

Bay St. Elaine—Terrebonne Parish

F. J. LeBlanc et al No. 1 Wurzlow, sec. 17-22s-18e. T.D. 10¾-in. csg. 1,008 ft.; bailed S.W.; tried to blow out; hole bridged.

Bayou Blue—Iberville Parish

Humble O. & R. Co. No. 3 Wilbert, sec. 74-9s-10e. T.D. 2,878 ft.; anhy.; P.B. 1,133 ft.; comp.; dry gas; ¼-in. ck.

Bayou Cocotris—Terrebonne Parish

Shell Pet. Corp. No. 1 Pelican, sec. 35-17s-15e. No report.

Big Lake—Cameron Parish

Union Sulphur Co. No. 1 Henry Hebert, sec. 18-12s-8w. Drlg. hd. sh.&sd. 8,957 ft.
Union Sulphur Co. No. 1 P. J. Herbert, sec. 18-12s-8w. Drlg. hd. sh. 8,375 ft.

Black Bayou—Calcasieu Parish

Shell Pet. Corp. No. 38 Watkins, Drlg. hd br. sh. 5,495 ft.

Caillou Island—Terrebonne Parish

Texas Co. No. 50 State, sec. 19-23s-20e. T.D. 4,857 ft.; P.B. 3,235 ft.; no report.

Cameron Meadows—Cameron

Magnolia-Humble O. & R. Co. No. 20 Cameron Meadows, sec. 21-14s-13w. No report.

Charenton—St. Mary Parish

Pan American Prod. Co. No. 1 Landry, sec. 25-13s-9e. No report.
Pan American Ref. Co. No. 4 Laws Realty Co., sec. 30-13s-10e. No report.
Pan American Prod. Co. No. 1 Veeder, sec. 30-13s-10e. No report.

Choctaw—Iberville Parish

Standard Oil Co. No. 10 Grove, sec. 52-9s-11e. T.D. 5,303 ft. in salt; D.S. stck.
Standard Oil Co. No. 6 Gay, sec. 52-9s-11e. T.D. 5,490 ft. in salt; sdtrkd. 4,411-75 ft.; R.U. to pmp.
Standard Oil Co. No. 7 Gay, sec. 52-9s-11e. T.D. 1,061 ft.; cmtd. 13⅜-in. csg. 956 ft.

Darrow—Ascension Parish

Humble O. & R. Co. No. 10 Gambell. T.D. 7,152 ft.; P.B. 6,917 ft.; abd.
Kiva Oil Co. No. 1 Duplessis, sec. 69-10s-2w. R.U.

Fausse Point—Iberia Parish

Texas Co. No. 3 State, sec. 35-11s-8e. T.D. 4,524 ft.; P.B. and sdtrkd. 2,904 ft.; drlg. sdy. sh. 2,957 ft.

Four Isle—Terrebonne Parish

Texas Co. No. 9 L.L.&E., sec. 24-21s-16e Drlg. sd. 5,684 ft.

Garden Island—Plaquemines Parish

Texas Co. No. 22 State, sec. 37-23s-33e. Core sh. 3,842 ft.

Gillis—Calcasieu Parish

Union Sulphur Co. No. 3 Bel, sec. 2-9s-8w. Drlg. sdy. sh. 5,446 ft.

Gueydan—Vermilion Parish

Pure Oil Co. No. 6 Mulney Investment Co., sec. 34-11s-1w. 10¾-in. csg. 1,049 ft.; T.D. 4,300 ft.; P.B. 4,196 ft.; tstd. S.W.; make squeeze job.

Hackberry—Cameron Parish

Burton-Sutton Joint Interest No. 2 A. Portie, sec. 22-12s-10w. Drlg. sh. 2,250 ft.
W. T. Burton No. 3 Lewis, sec. 22-12s-10w. R.U.
W. T. Burton Oil Co. No. 1 Henry, sec. 22-12s-10w. Drk.
W. T. Burton No. 4 Vincent, sec. 22-12s-10w. No report.
Stanolind O. & G. Co. No. 1-B Duhon, sec. 27-12s-10w. T.D. 6,233 ft.; 7-in. csg. 5,815 ft.; perf. 5,761-75 ft.
Stanolind O. & G. Co. No. 5 Duhon, sec. 22-12s-10w. Drlg. sh. 4,818 ft.
Stanolind O. & G. Co. No. 8 Carter & Sweeney, sec. 22-12s-10w. R.U.
Stanolind O. & G. Co. No. 9 Carter & Sweeney, sec. 22-12s-10w. Drlg. sh. 4,982 ft.
Stanolind O. & G. Co. No. 10 Carter & Sweeney, sec. 22-12s-10w. Drk.
Stanolind O. & G. Co. No. 52 State, sec. 22-12s-10w. Drlg. hd. sh.&L. 4,839 ft.
Stanolind O. & G. Co. No. 53 State, sec. 22-12s-10w. Drlg. sd.&sh. 1,435 ft.
Texas Co. No. 22-B State, Twp. 12s-9w. T.D. 7,628 ft.; 7-in. csg. 7,628 ft.; tstg.
Union Sulphur Co. No. 9 Doiron, sec. 37-12s-10w. Heaving sh. 6,109 ft.

Iowa—Jefferson Davis Parish

Magnolia Pet. Co. No. 12 Wait. Drlg. sh. 4,106 ft.
Shell Pet. Corp. No. 27 Heyd, sec. 40-13s-9e. P.B. T.D. 6,900 ft.; flw. 107 B.P.D. net oil with 1,190 bbls. wtr. on gas-lift.
Shell Pet. Corp. No. 28 Heyd, sec. 40-13s-9e. Cmtd. 9⅝-in. csg. 1,278.5 ft.

Jeanerette—St. Mary Parish

Herton Oil Co. No. 1 Banta, sec. 40-13s-9e. 9⅝-in. csg. 7,030 ft.; T.D. 9,765 ft.; P.B. and sdtrkd.; no report.
Herton Oil Co. No. 8 Carter, sec. 44-13s-9e. No report.

Jennings—Acadia Parish

Frank W. Bennett et al No. 1 Brethern and Christ Church, sec. 41-7s-2w. T.D. 4,875 ft.; P.B. 4,450 ft.; W.O.C.
Cosmo Pet. Co. No. 1 M. E. Crusel, sec. 42-9s-2w. T.D. 1,930 ft.; tstd. S.W. 1,260-68 ft.; S.D.
Cosmo Pet. Co. No. 1 Jenning Heywood, sec. 41-9s-2w. No report.
D. D. Feldman et al No. 1 McFarlain, sec. 41-9s-2w. Drlg. sh. 4,857 ft.
Glassell No. 1 Bourgeaux, sec. 41-9s-2w. No report.
Glassell No. 3 Trushell, sec. 42-9s-2w T. D. 6,785 ft.; cmtd. 7-in. csg.
La. Crusader No. 108 Houssiere Latreille, sec. 47-9s-2w. No report.
Louisiana Crusader Oil Co. No. 1 Heywood, Martin Campbell Sur., sec. 42 9s-2w. T.D. 3,850 ft.; set screen.
Port City Oil Co. No. 2 Jennings-Heywood, sec. 41-9s-2w. T.D. 2,050 ft.; 5⅛-in. csg. 2,034 ft.
Reiter-Foster Oil Co. No. 1 Cockrell et al, sec. 42-9s-2w. Cap rock 4,157 ft.; P.B. 3,157 ft.; perf. csg. 3,106-24 ft.; washing.
Stanolind O. & G. Co. No. 11 Crowley, sec. 48-9s-2w. P.B. T.D. 1,926 ft.; R.U. to pmp.
Superior Oil Co. No. 5 Leckelt, sec. 42-9s-2w. No report.
Superior Oil Co. No. 6 Leckelt, sec. 42-9s-2w. No report.
Superior Oil Co. No. 2 Moresi, sec. 41-9s-2w. No report.
Superior Oil Co. No. 3 Moresi, sec. 41-9s-2w. No report.

Lirette—Terrebonne Parish

Humble O. & R. Co. No. 1 Wurzlow, sec. 8w. Drlg. sh. 4,690 ft.

Lafitte—Jefferson Parish

Texas Co. No. 2 Milling, sec. 20-17s-24e. No report.
Texas Co. No. 1 State-Bayou Norman sec. 28-17s-24e. T.D. 9,725 ft.; run 7⅝-in. csg.

Lake Hermitage—Plaquemines Parish

Gulf Ref. Co. No. 7 Lafourche, sec. 13-18s-25e. Drlg. sd.&sh. 6,225 ft.

Lake Washington—Plaquemines Parish

Humble O. & R. Co. No. 25 Cockrell, sec. 35-20s-26e. Drlg. sh. 1,372 ft.

Lake Pelto—Terrebonne Parish

Texas Co. No. 17 State, sec. 17-23s-18e. Core sd. S.O. 6,551 ft.

Leesville—Lafourche Parish

Gulf Oil Corp. No. 3 Allen Ld. Co. T.D. 4,074 ft.; P.B. 3,699 ft.; 5-in. csg. 3,693 ft.; W.O.C.
Texas Co. No. 42 Leesville, sec. 27-21s-22e. No report.
Texas Co. No. 67 Leesville, sec. 27-21s-22e. No report.

Lockport—Cameron Parish

Magnolia Pet. Co. No. 6 Freeburg, sec. 9-10s-9w. T.D. 6,397 ft.; 7-in. csg. 6,898 ft.; perf. 6,898-6,937 ft.; tstd. S.W.; P.B. 6,908 ft.; I.P. 200 bbls. net oil, 50% S.W.

Long Lake—Lafourche Parish

Fohs Oil Co. No. 2 State, sec. 65-17s-19e. R.U.

New Iberia—Iberia Parish

Wm. Hellis No. 3 Schwing, sec. 57-12s-7e. T.D. 5,019 ft.; P.B. and sdtrkd.; drlg. 3,756 ft.
Texas Co. No. 3 Bryant, sec. 25-12s-7e. Drlg. 2,312 ft.
Wm. Hellis No. 9 Bernard, sec. 54-12s-7e.

T.D. 5,073 ft.; drlg. in sdtrkd. hole 3,256 ft.; no report.
Wm. Hellis No. 10 Bernard, sec. 54-12s-7e. R.U.
Wm. Hellis No. 6 Bullock-Burke, sec. 25-12s-7e. Drlg. sh.&L. 1,507 ft.
Texas Co. No. 3 Coleste, sec. 25-12s-7e. R.U.
Texas Co. No. 3 Duhe, sec. 26-12s-7e. T.D. 4,127 ft.; D.S. stuck.
Texas Co. No. 6-B Hanzen, sec. 54-12s-7e. Core sh. 4,281 ft.
Texas Co. No. 1 Schwing, sec. 71-12s-7e. Drlg. sh. 6,668 ft.

South Roanoke—Jeff Davis Parish

Union Sulphur Co. et al No. 1 T.R.P. Farms Co., sec. 23-10s-4w. Cg. sd.&sh. 9,132 ft.

Starks—Calcasieu Parish

Turnbull et al No. 2 Industrial Lbr. Co., sec. 19-9s-12w. Drlg. hd. sd.&L. 4,818 ft.

Sulphur—Calcasieu Parish

Union Sulphur Co. No. 846 fee, sec. 29-9s-10w. T.D. 5,392 ft.; P.B. 5,275 ft.; swbg.; no report.
Union Sulphur Co. No. 847 fee, sec. 29-9s-10w. T.D. 4,875 ft.; P.B. to sdtrk. at 2,555 ft.; no report.

St. Martinsville—St. Martin Parish

Tide Water Oil Co. No. 5 Smedes, sec. 57-11s-6e. Spd.

Valentine—Lafourche Parish

Pan American Prod. Co. No. 7 Harang, sec. 7-17s-20e. Drlg. sh. 7,148 ft.
Pan American Prod. Co. No. 8 Harang, sec. 9-17s-20e. S.D. for repairs 7,059 ft.
Pan American Prod. Co. No. 9 Harang, sec. 9-17s-20e. Drlg. sh. 5,298 ft.

Vinton—Calcasieu Parish

Superior Oil Co. No. 1 Gray, sec. 4-11s-12w. Drlg. sh. 3,568 ft.

S. LOUISIANA WILDCATS

Acadia Parish

H. E. Dalton No. 1 Setting, sec. 17-7s-1w. Drlg. sh. 3,929 ft.
Humble O. & R. Co. No. 1 Floyd Williams, sec. 34-8s-1e. Drlg. sh.&sd. 9,272 ft.
T. S. Markley No. 1 Daigle, sec. 19-7s-2e. Drk.
J. G. Mayo et al. No. 1 Bank of Commerce, sec. 19-7s-1e. S.D. 9,008 ft.

Avoyelles Parish

Coastal Mineral Co. No. 1 Purdy Heirs, sec. 25-2n-3e. T.D. 6,054 ft. in hd. sh.& L.; S.D.; W.O.

Calcasieu Parish

D. & D. Oil Co. No. 2 Lutcher-Moore, sec. 1-8s-13w. Drlg. sh. 3,875 ft.
Stanolind O. & G. Co. No. 1 Prairie Ld. & Canal Co., sec. 10-11s-9w. Drlg. sh. and shell 8,962 ft.

Cameron Parish

Humble O. & R. Co. No. 1 Hanszen, sec. 5-12s-6w. Abd. 9,628 ft.
Pure Oil Co. No. 2 State, sec. 14-13s-3w. Drlg. brittle sh. 6,762 ft.

Cameron Parish—Gulf of Mexico

Superior Oil Prod. Co. et al No. 1 State-Gulf of Mexico, 3,800 ft. W, 6,200 ft. S of SE cor. of irregular sec. 4-15s-8w. Driving piling.

East Baton Rouge Parish

Cavalier Oil Co. No. 1 Elliott, sec. 3-9s-2e. T.D. 6,127 ft.; D.S. stuck.

Evangeline Parish

Continental Oil Co. No. 1 Tate, sec. 44-3s-2e. Drlg. sh.&L. 8,226 ft.
Schlicher Prod. Co. No. 1 Denois Ld. & St. Stone Co., sec. 35-3s-1w. Drlg. 100 ft.

Iberia Parish

Jefferson Lake Oil Co. No. 414 State Lake Pigneur, Twp. 12s-5e. T.D. 7,071 ft.; swbd. S.W. and S.O.

Jefferson Parish

Triangle Oil Co. No. 1 Conroe, sec. 125-12s-11e. S.D. 3,270 ft.

Jefferson Davis Parish

Stanolind O. & G. Co. No. 2-B Calcasieu Natl. Bank, sec. 28-7s-3w. 13⅜-in. csg. 1,950 ft.; drlg. sh.&sd. 9,781 ft.

Lafourche Parish

Gulf Oil Corp. No. 3 State P.P., sec. 36-23s-21e. Drlg. hd. sh. 6,595 ft.

Livingston Parish

Grubb et al No. 1 Evans, sec. 47-7s-2e. Drlg. hd. L.&sh. 7,598 ft.

Plaquemines Parish

Gulf Oil Corp. No. 3 State (Jackson dist). Rig.

Rapides Parish

R. D. Webb No. 1 A. M. Brasher, sec. 22-4n-2w. S.D. 5,236 ft.

St. Bernard Parish

Southern Sulphur Co. No. 2 State Lake Borgne, sec. 38-14s-15e. 13⅜-in. csg. 303 ft.; S.D. 3,440 ft.

St. Landry Parish

Gulf Oil Corp. No. 1 Haas & Hirsch, sec. 12-6s-1e. Drlg. sd.&sh. 8,309 ft.

St. Martin Parish

Texas Co. No. 3 State, sec. 14-10s-9e. cmtd. on bttm.; old T.D. 8,208 ft.; drlg. sdtrkd. hole; sh. 6,858 ft.

St. Mary Parish

Texas Co. No. 1 Horse Shoe Bayou, sec. 40-17s-9e. T.D. 12,261 ft.; P.B. 10,929 ft.; perf. 7⅝-in. csg. with 56 holes 10,863-73 ft.; I.P. 1,152 B.P.D. P.L.O.; ¼-in. ck.; T.P. 2,000 lbs.; csg. sealed; 37.7° grav.
Texas Co. No. 1 State-Bateman Lake, sec. 21-16s-12e. T.D. 10,541 ft.; 7⅝-in. csg. 10,515 ft.

Vernon Parish

Castor Creek Drlg. Co. No. 1 Llano Del Rio, Inc., sec. 34-2n-9w. Drk.

TEXAS

Week Ending August 14

GULF COAST FIELDS

Danbury—Brazoria County

Rowan Drlg. Co. No. 1 Jamison, Henry Austin Sur. 10¾-in. csg. 1,496 ft.; no report.

Hastings—Brazoria County

Humble O. & R. Co. No. 1 Alexander, H. T.&B. Sur. No. 28. T.D. 6,000 ft.; 5½-in. csg. 5,688 ft.; I.P. 646 B.P.D.; ¼-in. ck.; T.P. 850 lbs.; C.P. 900 lbs.
Humble O. & R. Co. No. 2 Alexander, H. T.&B. Sur. No. 28. Drlg. sh. 1,910 ft.
Humble O. & R. Co. No. 1 C. A. Borders, Perry & Austin Sur. T.D. 6,125 ft.; 5½-in. csg. 6,085 ft.; I.P. 381.36 B.P.D.; ¼-in. ck.; T.P. 500 lbs.; C.P. 300 lbs.
Humble O. & R. Co. No. 10-A Brown, W. M. Snyder Sur. T.D. 6,107 ft.; 5½-in. csg. 6,085 ft.; I.P. 585 B.P.D.; ¼-in. ck.; T.P. 150 lbs.; no C.P.
Humble O. & R. Co. No. 6-B Cecil Brown, C Lot 86, Perry & Austin Sur. Drlg. sh. 3,150 ft.
Humble O. & R. Co. No. 16 Cecil Brown, W. H. Snyder Sur. Drlg. sh. 1,938 ft.
Humble O. & R. Co. No. 5 Haden, R. Hoppell Sur. T.D. 6,080 ft.; cmtd. csg.
Humble O. & R. Co. No. 2 Schindler. Drlg. sh. 5,446 ft.
Humble O. & R. Co. No. 4 South Texas Grain Co., Lot 93, Perry & Austin Sur. Drlg. sh. 4,828 ft.
Humble O. & R. Co. No. 5 South Texas Grain Co., Perry & Austin Sur. T.D. 6,062 ft.; 5½-in. csg. 5,983 ft.; I.P. 646.08 B.P.D.; ¼-in. ck.; T.P. 900 lbs.; no C.P.
Jay Simmons No. 1 G. H. Alexander, H. T.&B. Sur. No. 28. R.U.
Stanolind O. & G. Co. No. 2 Barnett, H.T. &B. Sur. No. 29. Drlg. hd. sd. 5,980 ft.
Stanolind O. & G. Co. No. 6-B Brown. Drlg. sh. and shell 2,306 ft.
Stanolind O. & G. Co. No. 3 Condon, H. T.&B. Sur., sec. 29. Drlg. sd. 5,650 ft.
Stanolind O. & G. Co. No. 7 Curkeet, H. T.&B. Sur. No. 30. T.D. 6,080 ft.; 7-in. csg. 5,883 ft.; I.P. 619 B.P.D.; ¼-in. ck.; T.P. 850 lbs.; C.P. 925 lbs.
Stanolind O. & G. Co. No. 12-B Drake, H. T.&B. Sur. No. 36. Drlg. sh. and shell 3,380 ft.
Stanolind O. & G. No. 12 H. H. Ford, H. T.&B. Sur. No. 29. R.U.
Stanolind O. & G. Co. No. 8 Grote, A.C. H.&B. Sur. T.D. 6,080 ft.; 7-in. csg. 6,079 ft.; I.P. 595 B.P.D.; ¾-in. ck.; T.P. 850 lbs.; C.P. 860 lbs.
Stanolind O. & G. Co. No. 2 Legare, H.T. &B. Sur. No. 29. T.D. 5,710 ft.; 7-in. csg. 5,454 ft.; I.P. 613 B.P.D.; ¼-in. ck.; T.P. 900 lbs.; C.P. 950 lbs.
Stanolind O. & G. Co. No. 4 Martha Long, H.T.&B. Sur. No. 29. T.D. 1,267 ft.; cmtd. 10¾-in. surf. csg. 1,264 ft.
Stanolind O. & G. Co. No. 4 McKibben, H.T.&B. Sur. No. 29. Drlg. sh. 1,444 ft.
Stanolind O. & G. Co. No. 9 Paul, A.C.H. &B. Sur. No. 2. T.D. 6,080 ft.; 7-in. csg. 6,079 ft.
Stanolind O. & G. Co. No. 13 Paul, A.C. H.&B. Sur. No. 2. T.D. 6,080 ft.; 7-in. csg. 6,079 ft.
Stanolind O. & G. Co. No. 16 Paul, A.C. H.&B. Sur. No. 2 Drk.
Stanolind O. & G. Co. No. 1 Randall, A.C. H.&B. Sur. No. 2, Lot 29. Drk.
Stanolind O. & G. Co. No. 8 L. D. Shaw, H.T.&B. Sur. No. 36. Drlg. hd. sd. 5,648 ft.
Stanolind O. & G. Co. No. 9 Sneed, A.C. H.&B. Sur. No. 2. Drlg. hd. L. 5,093 ft.
Stanolind O. & G. Co. No. 10 Sneed, A.C. H.&B. Sur. No. 2. Drlg. hd. sd. 5,134 ft.
Stanolind O. & G. Co. No. 12 Gilbert Sneed, A.C.H.&B. Sur. No. 2. Drk.
Stanolind O. & G. Co. No. 1 Sparks, H.T. &B. Sur. No. 29. T.D. 6,080 ft.; 7-in. csg. 5,849 ft.; I.P. 510 B.P.D.; ¼-in. ck.; T.P. 880 lbs.; C.P. 920 lbs.
Stanolind O. & G. Co. No. 5 Surface, B.B. B.&C. Sur. Drlg. sh. 2,077 ft.
Stanolind O. & G. Co. No. 9 Turner, A.C. H.&B. Sur. No. 1. T.D. 6,080 ft.; 7-in. csg. 5,999 ft.; I.P. 217 bbls. in 9 hrs.; ¼-in. ck.; T.P. 900 lbs.; C.P. 900 lbs.
Stanolind O. & G. Co. No. 10 Turner, A. C.H.&B. Sur. No. 1. Rig.
Stanolind O. & G. Co. No. 1 Wagner Sparks, H.T.&B. Sur. No. 29. Drlg. sd. and clay 480 ft.
Stanolind O. & G. Co. No. 1 Winston, H. T.&B. Sur. No. 29. T.D. 6,080 ft.; 7-in. csg. 6,079 ft.; perf. 6,054-66 ft.
Stanolind O. & G. Co. No. 5 Wooster, A. C.H.&B. Sur. No. 1. Rig.
Stanolind O. & G. Co. No. 1 Wright. T.D. 6,080 ft.; 7-in. csg. 6,079 ft.

Lockridge—Brazoria County

Gulf Oil Corp. No. 1 Kempner & Stevens, J. W. Hall Sur. Sdy. sh. 6,378 ft.; I.P. 645 B.P.D.; ⅛-in. ck.; T.P. 850 lbs.; C.P. 950 lbs.
Gulf Oil Corp. No. 2 Baker, J. W. Hall Sur. T.D. 6,368 ft.; tstg.
Gulf Oil Corp. No. 1 Great Southern, E. D. Robertson Sur. Rig.
Gulf Oil Corp. No. 5-A Wilkes & Smith, J. W. Hall Sur. T.D. 6,374 ft.; flwd. 34 bbls. in 3½ hrs.; ⅞-in. ck.; T.P. 800 lbs.
Kirby Pet. Co. No. 1 Baker, J. W. Hall Sur. T.D. 6,369 ft.; cmtd. csg.
Dr. C. M. Lusk No. 1 Ramsey State Farm, J. W. Hall Sur. Drlg. sh. 4,195 ft.
Shell Pet. Corp. No. 1-B Ramsey, J. W. Hall Sur. Sd. 6,312 ft.; rmg. to run csg.

Manvel—Brazoria County

F. D. Jones et al No. 1-A Bankers Mtg., E. Little Sur., Lot 75. Drk.
Texas Co. No. 3 W. O. Morrison, A.C.H.& B. Sur. No. 91. Drlg. sd.&bldrs. 1,848 ft.
Texas Co. No. 4-B Way, Thos. Spraggin Sur. Drlg. gbo.&bldrs. 1,146 ft.

Old Ocean—Brazoria County

Harrison & Abercrombie No. 1 Larsen, C. Breen Sur. Drlg. hd. sd. 9,620 ft.
Harrison & Abercrombie No. 1 Smith, C. Breen Sur. Drlg. 800 ft.

Stratton Ridge—Brazoria County

A. B. Head et al No. 1 Seeburn Est., J. E. Groce Sur. No report.

West Columbia—Brazoria County

Texas Co. No. 16 Abrams, G. Tenille Sur. Drlg. sd. 5,526 ft.
Texas Co.-Sterling O. & R. Co. No. 2 Phillips, G. Tenille Sur. Drlg. sd. 5,409 ft.

Calhoun—Hoyser—Victoria County

Geo. Echols No. 6 W. H. Bennett, J. E. Galban Sur. Rig.
Geo. Echols No. 1 Lander, Galban Sur. T.D. 5,755 ft.; 7-in. csg. 5,755 ft.; perf. csg. 5,744-52 ft.; I.P. 336 B.P.D.; 11/64-in. ck.; T.P. 600 lbs.; C.P. 900 lbs.
Gulf Oil Corp. No. 1 T. P. Traylor, J. E. Galban Sur. Drk.
Humble O. & R. Co. No. 2 Marshall, A. Sisneros Sur. T.D. 3,400 ft.; gas blowout; killed; abd.
Humble O. & R. Co. No. 3 Marshall, A. Sisneros Sur. Rig.
Humble O. & R. Co. No. 10 Welder, J. M. Rios Sur. Drlg. hd. sd. 4,871 ft.
Humble O. & R. Co. No. 17-A P. H. Welder, J. M. Rios Sur. T.D. 5,487 ft.; I.P. 298 B.P.D.; ⅞-in. ck.; T.P. 625 lbs.; C.P. 700 lbs.
Magnolia Pet. Co. No. 1 Lander, Galban Sur. Cg. sd.&sh. 5,470 ft.
Normandie Oil Co. No. 3 Cook, A. Sisneros Sur. Drlg. sh. 868 ft.
Portilla Drlg. Co. No. 2-B Welder, J. M. Rios Sur. Drk.
Sinclair Prairie Oil Co. No. 1 W. H. Bennett, A. Sisneros Sur. T.D. 5,752 ft.; cmtd. csg.
Sun Oil Co. No. 1 Coffey, J. Gabban Sur. Loc.

Anahuac—Chambers County

Humble O. & R. Co. No. 13 Broussard-Hebert. T.D. 7,105 ft.; flwg. 21 B.P.H.; ¼-in. ck.
Humble O. & R. Co. No. 13 Gripon, sec. 51, H.&T.C. Sur. T.D. 7,120 ft.; flwg. 4 B.P.H.; ¼-in. ck.
Humble O. & R. Co. No. 11 Johnson. T.D. 7,123 ft.; P.B. 7,071 ft.; tstg.
Humble O. & R. Co. No. 12 Johnson, sec. 47, H.&T.C. Sur. Drk.
Humble O. & R. Co. No. 6 Marshall. Drlg. sd. 7,110 ft.

Cotton Lake—Chambers County

Salt Dome Oil Corp. No. 2-B Lawrence, S. Barrow Sur. Rig.
Salt Dome Oil Co. No. 1-E Lawrence, Winfree Sur. Sd. 6,530-35 ft.; 4-min. D. S.T. 6,515-35 ft.; ⅛-in. cks. top and bottom; recvd. 6 thrbls. S.W.; abd.

Seabreeze—Chambers County

Sun Oil Co. No. 3 Acorn, H.T.&B. Sur. 103. Rig.
Sun Oil Co. No. 1 Jackson, Yarbo Sur. T.D. 8,580 ft.; P.B. 8,500 ft.; rng. 9⅝-in. csg.

Turtle Bay—Chambers County

Stanolind No. 4-A Middleton, S. Burney Sur. M.I.M.
Stanolind O. & G. Co. No. 3 Middleton, Carroll Sur. Drlg. sh. 1,850 ft.
Stanolind O. & G. Co. No. 1 Morrisey, M. A. Carroll Sur. T.D. 6,625 ft.; 7-in. csg. 6,610 ft.; set screen.
Stanolind O. & G. Co. No. 2 Wm. Cooper Hrs., S. Burney Sur. Rig.
Sun Oil Co. No. 5 Chambers, M. A. Carroll Sur. Sd. 6,522-6,600 ft.; 7-in. csg. 6,512 ft.; 3,510,000 ft. gas; ¼-in. ck.; T.P. 2,500 lbs.; C.P. 2,500 lbs.
Sun Oil Co. No. 6 Chambers, M. A. Carroll Sur. Drk.

Garwood—Colorado County

Coyle-Concord No. 2 Mary South, sec. 41, I.&G.N. Sur. Cmtd. 10⅝-in. csg. 628 ft.

Big Creek—Fort Bend County

Barnett Pet. Corp. No. 2 J. H. P. Davis B. Nickson Sur. T.D. 3,080 ft.; P.B. and sdtrkd.; T.D. 3,729 ft.; perf. csg. 3,697 3,705 ft.; perf. csg. 3,672-80 ft.; sanded up; reworking.

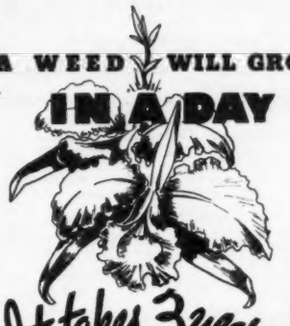
Blue Ridge—Fort Bend County

Texas Gulf Prod. Co. No. 17 Blakely, Lot 9, Blk. C, E. Drew Sur. No report.

Boling—Fort Bend County

Mackhank Oil Co. No. 6-C E. C. Farmer,

A WEED WILL GROW IN A DAY



It takes 3 years TO GROW AN ORCHID!

Over fifteen years experience has gone into the perfection of the MILLER Sand Pump—the reason it is the fastest and most economical method of cleaning out sand and sediment from wells. Increase your production with a MILLER—first choice throughout the world.

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type, ¼-inch wall tubes HEAVY Type Sand Pumps.

INTERCHANGEABLE BOTTOMS
To Meet Every Condition

● BAILER BOTTOM
With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

● SAND BOTTOM
Used when tools are run and when well is shot to quickly remove loose material.

● STAR BOTTOM
Used for cutting the sand loose.

● CHISEL BOTTOM
(In Pump)
With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

Write for Descriptive Folder and Price List

See Page 1106 COMPOSITE CATALOG

PATENTED
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General Offices and Shop, Box 4516
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FOR SALE BY SUPPLY STORES EVERYWHERE

A. Scott Sur. Sd. 4,760-94 ft.; I.P. 546 B.P.D.; ¼-in. ck.; T.P. 575 lbs.; C.P. 675 lbs.

Orchard—Fort Bend County

Gulf Oil Corp. No. 53 Moore, J. Frazier Sur. No report.
Gulf Oil Corp. No. 54 Moore, J. Frazier Sur. Drlg. sd.&sh. 3,840 ft.

Dickinson—Galveston County

Atlantic Ref. Co. No. 2 Anderson, W. G. Banks Sur. Drk.
Bennet-Kenyon Oil Co. No. 1 Schroeder, W. G. Banks Sur. No report.
Coast Pet. Co. No. 7 Stewart, W. K. Wilson Sur. T.D. 8,734 ft.; perf. 6⅝-in. csg. 8,730 ft.; P.B. 8,530 ft.; perf. csg. 8,496-8,520 ft.; I.P. 705 B.P.D.; ¼-in. ck.; T.P. 1,600 lbs.; C.P. 1,725 lbs.
Humble O. & R. Co. No. 1 Leake, W. K. Wilson Sur. T.D. 8,115 ft.; cmtd. 7-in. csg.
Humble O. & R. Co. No. 1 Mulley. Drlg. hd. sh. 5,361 ft.
Pure Oil Co. No. 2-B Hutchens, P. G. Merritt Sur. Drlg. sh. 4,100 ft.
Stanolind O. & G. Co. No. 3 Damiani, W. K. Wilson Sur. Drlg. hd. sh.&L. 6,122 ft.

High Island—Galveston County

Stanolind O. & G. Co. No. 10 B.&O., M. Dunman Sur. Rig.
Stanolind O. & G. Co. No. 62-A Cade, W. Fitzsimmons Sur. T.D. 5,800 ft.; P.B. and sdtrkd.; T.D. 4,945 ft.; P.B. 4,525 ft.; drlg. sd.&L. 4,894 ft.
Stanolind O. & G. Co. No. 1 C. E. Smith, M. Dunman Sur. No report.

Silsbee—Hardin County

Republic Prod. Co.-Houston Oil Co. No 19 Brooks, G. W. Brooks Sur. Sd. 6,892-6,900 ft.
Republic-Houston Oil Co. No. 21 Brooks fee, G. W. Brooks Sur. Drk.

Bammel—Harris County

Geo. Lawrence No. 2 Zapp, J. Farwell Sur. R.U.

Clinton—Harris County

Stanolind O. & G. Co. No. 1 A. S. Moody, Reels & Trobough Sur. Drlg. sh. 601 ft.

Friendswood—Harris County

V. H. Borsodi No. 1 Ross, Thos. Choate Sur., Lot 11, Blk. 3, Sherman Place Subd. T.D. 6,020 ft.; W.O.
H. C. Cockburn No. 1 O. P. Woodburn, A. Whitlock Sur. Loc. abd.
Humble O. & R. Co. No. 1 Louise Beamer, Thos. Choate Sur. R.U.
Glenn McCarthy No. 1 Whitcomb, T. Choate Sur. S.W. sd. 6,550-59 ft.; abd.

Goose Creek—Harris County

Bob Foster No. 1 Eisenhour, Wm. Scott Sur. T.D. 2,741 ft.; no report.
Gulf Oil Corp. No. 7 Hirsch State Ld., Wm. Scott Lower Lge. Rig.

South Houston—Harris County

Stanolind O. & G. Co. No. 2 Mrs. Minnie Barrett et al, Unit 2, H.T.&B. Sur. No. 6. T.D. 1,480 ft.; cmtd. 9⅝-in. surf. csg. 1,476 ft.
Stanolind O. & G. Co. No. 2 H. L. Bennett et al, Unit 13, H.T.&B. Sur. No. 6. Drk.
Stanolind O. & G. Co. No. 2, Drlg. Dist. No. 7. T.D. 4,000 ft.; 5⅝-in. csg. 3,874 ft.
Stanolind O. & G. Co. No. 8 First Natl. Bank, Callahan & Vance Sur. T.D. 4,885 ft.; 5¾-in. csg. 4,840 ft.; swbd. S.W.; abd.
Stanolind O. & G. Co. No. 2 H. G. Funk, Callahan and Vince Sur. R.U.

Tomball—Harris County

Humble O. & R. Co. No. 4 Burlington, Unit 5. T.D. 5,581 ft.; I.P. 541 B.P.D.; ¾-in. ck.
Humble O. & R. Co. No. 5 Mary Kuehn, W. Usener Sur. Drlg. sh. 2,100 ft.
Humble O. & R. Co. et al No. 16 Reid. Goodrick Sur. T.D. 5,546 ft.; 5½-in. csg. 5,539 ft.; I.P. 525 B.P.D.; ¼-in. ck.; T.P. 1,700 lbs.; C.P. 1,200 lbs.
Texas Co. No. 4 Hillegiest, J. House Sur. T.D. 5,626 ft.; cmtd. 7-in. csg. 5,622 ft. I.P. 18 B.P.H.; 9/64-in. ck.; T.P. 500-600 lbs.

Edna—Jackson County

Steinberger Pet. Corp. No. 2 Druschell, Rodriguez Sur. Drk.

Ganado—Jackson County

Texas Co. No. 1 C. E. Niebuhr, Morris & Cummings Sur. No. 4. Drlg. sh. 2,325 ft.

Amelia—Jefferson County

Humble O. & R. Co. No. 4 Langham, C. Williams Sur. Drlg. sh. 1,120 ft.
Humble O. & R. Co. No. 6 R. J. Peveto, C. Williams Sur. T.D. 6,780 ft.; comp.; 651.69 B.P.D.; ¼-in. ck.; T.P. 950 lbs.; C.P. 1,050 lbs.
Humble O. & R. Co. No. 7 Phelan, C. Williams Sur. Sh. 6,633 ft.
Humble O. & R. Co. No. 1 W. D. Sunter, C. Williams Sur. T.D. 6,778 ft.; pulling screen and lnr.
Glenn H. McCarthy No. 1-C Longe, H. Williams Sur. Oil sd. 5,380-5,406 ft.; 7-in. csg. 5,360 ft.
Stanolind O. & G. Co. No. 7 Sargi, H. Williams Sur. Drlg. sh. 1,163 ft.
Sun Oil Co. No. 1 Galley, Houston Sur. T.D. 6,735 ft.; P.B. 5,883 ft.; 5-in. csg. 5,865 ft.; I.P. 8 B.P.H.; ⅛-in. ck.; T.P. 325 lbs.; C.P. 950 lbs.

Big Hill—Jefferson County

Stanolind O. & G. Co. No. 2-B Pipkin, Wm. McFadden Sur. T.D. 4,515 ft.; cmtd. 5¾-in. csg. on btm.
Stanolind O. & G. Co. No. 2 May Fitzhugh, Wm. McFadden Sur. Drlg. sh. 4,030 ft.
Stanolind O. & G. Co. No. 4-A Pipkin. T.&N.O. Sur. Sh. 5,416 ft.; D.S. stuck.

Fannett—Jefferson County

Gulf Oil Corp. No. 1 Junker-Spencer, W. H. Smith Sur. R.U.

LaBelle—Jefferson County

Sun Oil Co. No. 1 John Ward, 933 ft. S of No. 2 Broussard, Wm. Burton Sur. 18⅝-in. csg. 109 ft.; 9⅝-in. csg. 8,538 ft.; T.D. 9,951 ft.; 7-in. csg. 9,951 ft.; cd. gas sd. 10,043-46 ft.; cutting and pulling stuck D.S.

Nome—Jefferson County

Sun Oil Co. No. 6 Long, J. Blair Sur. T.D. 6,043 ft.; 5⅝-in. csg. 6,004 ft.
Sun Oil Co. No. 10 Paggi Est., J. W. Kirby Sur. Drlg. sh. 4,695 ft.

North Cheek—Jefferson County

Magnolia Pet. Co. No. 2 Phelan, S. Stevens Sur. No report.

Cleveland—Liberty County

Gulf Oil Corp. No. 19-C Kirby, J. Pleasants Sur. Sd. 5,872-86 ft.; cmtd. 7-in. csg.

Hankamer—Liberty County

Gulf Oil Co. No. 25 E. W. Boyt, Amos Allen Sur. Sd. 5,983 ft.; D.S.T. rec. 50 ft. mud and no oil or wtr.

Hardin—Liberty County

Shell Pet. Corp. No. 1 Cessna, H. B. Johnson Sur. Drlg. sh. 1,144 ft.
L. W. Wickes No. 1 Lynott Buffman, J. Robinson Sur. Drlg. hd. sh. 4,760 ft.
Woodley Pet. Co. No. 2-W. McMurtay, H. B. Johnston Sur. Drlg. sh. 1,445 ft.

Hull—Liberty County

Bishop Oil Co. No. 1 C. R. Wilson, J. Devore Sur. Oil sd. 780-88 ft.; T.D. 4,127 ft.; 7-in. csg. 2,204 ft.; perf. csg. 2,286-90 ft.; P.B. and strkd.; S.D. 2,276 ft.
Gulf Oil Corp. No. 24 Baldwin, J. Devore Sur. No report.
Houston Prod. Co. No. 2 Hannah, J. Devore Sur. No report.
Texas Co. No. 8 Hannah fee, J. Devore Sur. Drlg. sh. 4,578 ft.
Texas Co. No. 9 Hannah fee, J. Devore Sur. Drlg. sh. 1,208 ft.

Bay City—Matagorda County

Hamman Expl. Co. No. 2 J. C. Crook, E. Hall Sur. T.D. 8,162 ft.; 7-in. csg. 8,160 ft.; perf. 8,000-8,143 ft.; to make D.S.T.

Buckeye—Matagorda County

United North & South Development Co. No. 1 G.B.M., Cotton Lge. No report.

Hawkinsville—Matagorda County

Sun Oil Co. No. 2 Craig, T. Williams Sur. Top salt 796 ft.; base salt 2,099 ft.; 18⅝-in. csg. 2,174 ft.; 13⅜-in. csg. 3,700 ft.; 9⅝-in. csg. 5,689 ft.; T.D. 5,969 ft.; hole cleaned; P. B. and sdtrkd.; making up 3-in. drill pipe; 7-in. csg. 6,044 ft.; T.D. 6,706 ft.; rmg.

Markham—Matagorda County

Hamil & Hamil No. 3 Hudson, H. Parker Sur. T.D. 3,750 ft.; P.B. 3,700 ft.; sdtrkd.; T.D. 2,637 ft.; 7-in. csg. 3,635 ft.; I.P. 116 B.P.D.; ⅞-in. ck.
Turman Oil Co. et al No. 3 Hudson, H. Parker Sur. R.U.

Palacios—Matagorda County

Glenn McCarthy No. 2 Foley, L. Goodwin Sur. Sd. 7,849-92 ft.; 7-in. csg. 7,892 ft.; perf. 7,850-68 ft.; to test.
Glenn McCarthy No. 1 W. M. Rohls, sec. 10, L. Goodwin Sur. Cg. hd. sh. 8,701 ft.
Glenn McCarthy No. 1 Palacios State Bank, L. Goodwin Sur. T.D. 7,935 ft.; 7-in. csg. 7,391 ft.
Sun Oil Co. No. 1 Bay Shore Farms, Lewis Goodwin Sur. T.D. 8,747 ft.; cmtd. 9⅝-in. csg.

Orange—Orange County

Texas Co. No. 12 Kuhn, T. J. Nolgrass Sur. Drlg. hd. L. 3,012 ft.

Segno—Polk County

Gulf Oil Corp. No. 1-B Quinn. Drlg. 1,000 ft.

Refugio—Refugio County

Houston Oil Co. No. 33 Pratt-Hewitt-Rook, Thos. Mullen Sur. T.D. 6,126 ft.; cmtd. csg. 6,117 ft.

Spurger—Tyler County

Republic-Houston Oil Co. No. 4 Hurd, N. Hurd Sur. Cd. oil sd. 7,646 ft.; to make D.S.T.
Republic-Houston Oil Co. No. 5 Hurd fee, N. Hurd Lge. Drk.

McFadden—Victoria County

Transwestern Oil Co. No. 4, McFaddin Sur. No report.

Placedo—Victoria County

Barnsdall Oil Co.-American Liberty Oil Co. No. 12 Pickering. T.D. 4,767 ft.; 7-in. csg. 4,752 ft.; I.P. 130 B.P.D.; ⅛-in. ck.; T.P. 200 lbs.
Barnsdall-American Liberty Oil Co. No. 21 Pickering & Roos, S.A.&M.G. Sur. No report.
Barnsdall Oil Co. et al No. 22 Pickering & Roos, S.A.&M.G. Sur. No report.
T. N. Development Co. No. 1 Henderson, S.A.&M.G. Sur. T.D. 4,777 ft.; 5-in. csg. 4,766 ft.; comp.; no report.
H. B. Ownby No. 3 T. P. Traylor, S.A.& M.G. Sur. No. 7. Drlg. sh. 750 ft.
T. N. Dev. Co. No. 1-A Henderson & Pickering, Wm. Rupley Sur. Rig.

Clay Creek—Washington County

Sun Oil Co. No. 7 Droeger, J. F. Perry Sur. R.U.

Five Corners—Wharton County

Texas Co. No. 8-B Pierce, J. Hyland Sur. T.D. 5,561 ft.; 7-in. csg. 5,555 ft.; drlg. plug.

Louise—Wharton County

Pure Oil Co. No. 5 Isaac Weaver, J. M. Brownson Sur. T.D. 5,150 ft.; top oil sd. 5,108 ft.; 7-in. csg. 5,108 ft.; I.P. 49 B.P.D.; ¼-in. ck.; T.P. 600 lbs.; csg. sealed.

Magnet—Wharton County

Atlantic Ref. Co. No. 2-B H. C. Cockburn, Smith & McKenzie Sur. T.D. 5,550½ ft.; 7-in. csg. 5,542 ft.; tstd. S.W.; P.B. 5,541½ ft.; perf. csg. 5,537-41 ft., 20 holes; I.P. 227 B.P.D.; ⅞-in. ck.; T.P. 1,550 lbs.; C.P. 1,950 lbs.
Atlantic Ref. Co. No. 3-B Cockburn, Smith & McKenzie Sur. Cmtd. 10¾-in. csg. 1,340 ft.
Humble O. & R. Co. No. 1 Cockburn, S. Castleman Sur. 10¾-in. csg.; 1,236 ft.; T.D. 5,550 ft.; 7-in. csg. 5,540 ft.; swbg.
Peyton Bros. No. 1 Gish, Lot 2, Blk. 84, M.L.T. Co. Subd., Smith & McKenzie Sur. Drlg. 75 ft.

Pickett Ridge—Wharton County

Texas Co. No. 33-A Pierce Est., G.B.&N Sur. No. 4; 9,000-ft. test. T.D. 8,408 ft.; P.B. and sdtrkd. 7,458-92 ft.; drlg. sh. 8,020 ft.

Withers—Wharton County

Texas Co. No. 31-C Pierce, Wm. Pettus Sur. T.D. 5,557 ft.; 7-in. csg. 5,552 ft. pulling lnr.
Texas Co. No. 36-C Pierce Est., Wm. Pettus Sur. Drk.
Texas Co. No. 37-C Pierce, Wm. Pettus Sur. Abd. 5,682 ft.
Texas Co. No. 1 A. C. Thompson, Blk. 3, Wm. Peters Sur. Drlg. sh.&L. 2,959 ft.

GULF COAST WILDCATS

Brazoria County

Jack Frazier et al No. 1 Temple Lbr. Co., H.T.&B. Sur. No. 35. Rig.
Humble O. & R. Co. No. 1 W. B. Munson, S. Carter Sur. R.U.
Ohio Oil Co. No. 1 Kempner Adams, H. T.&B. Sur. No. 33. Cg. sh. 6,329 ft.
Pure Oil Co. No. 1 P. M. Slade, S. F Austin Lge. T.D. 8,397 ft.; hole heaved to 8,120 ft.; washing to btm.
Texas Gulf Prod. Co. No. 1 W. D. Adams, H.T.&B. Sur. No. 40. Drlg. 100 ft.
Texas Co. No. 2 Robbins, James W. Brougham Sur. Drlg. sh. 7,512 ft.

Chambers County

George H. Anderson et al, J. Janis Sur. Cg. sd. 6,457 ft.
David B. MacDaniels No. 1 S. E. Barrow, Luke Bryan Sur. T.D. 7,225 ft.; D.&A.

Fort Bend County

Research, Inc., No. 1 Moore, S. Kennedy Sur. S.D. 5,033 ft.

Galveston County

Maco Stewart No. 1 fee, Chas. Spillman Sur. Cmtd. 16-in. csg. 72 ft.

Harris County

Superior Oil Co. No. 1 Butler, Eehrhardt Sur. Cg. sh. 10,390 ft.
West Prod. Co. No. 1 Ammon Underwood, Nicklos Clopper Sur. Cg. sh. 5,057 ft.

Jackson County

George W. Greet et al No. 1 J. R. Davis. David Hoffman Sur. T.D. 6,991 ft.; cut and pulled stuck D.P. to 6,287 ft.; S.D.

Liberty County

Humble O. & R. Co. No. 2 Sabine Tram, Malinda Whittington Sur. (Devers area). Drk.
J. G. Mayo et al No. 1 Gibbs Bros. Lbr. Co., J. D. Martinez Sur. Drlg. sh. and shells 3,446 ft.

Matagorda County

Continental Oil Co. No. 2 Hawkins Est., D. McCarty Sur. T.D. 7,212 ft.; D.S. stuck.
Royal O. & G. Corp. No. 1 T. J. Ewing. Burnett and Sojourner Sur. S.W. sd. 9,130 ft.; abd.

Montgomery County

J. W. Pfiffner No. 1 Spillar , R. Marsh Sur. Drlg. sh. 4,435 ft.

Newton County

Houston Oil Co.-Republic Prod. Co. No. 1 Sabine Tram Co., H.&T.C. Sur., sec. 35. T.D. 7,152 ft.; abd.

Polk County

H. E. Williams & Thompson No. 1 Carter, H. Augustine Sur. Drlg. sh. 4,133 ft.

Tyler County

McArthur & Nixon No. 1 Kountze, J. A. Hankins Sur. S.D. 3,851 ft.

Washington County

K. D. Harrison and C. E. Starr No. 1 Charles and Wm. Ellerman, Wm. Bridges Lge. 13-in. csg. 290 ft.

S. W. TEXAS WILDCATS

Aransas County

Barnsdall Oil Co. No. 2 Kate Edwards, 330 ft. S line. Lot 85, 660 ft. SW No. 1, Wm. Lewis Sur. Drlg. 9,778 ft.

Bastrop County

Conservative Oil Co. No. 1 Wentland, F. Wilkerson Sur. Spd.

Marts & Beavens No. 1 Gilliam, Thos. Garretson Sur. Drlg. 657 ft.
Hantho-Nelson, Inc., No. 1 Litton, 71-ac. tr., Cedar Ck. Community. T.D. 2,112 ft.; flwd. oil and bridged; cleaned hole; swbg.
Hantho-Nelson No. 2 Litton, 660 ft. W of No. 1, 75-ac. tr., Cedar Ck. Community. M.I.M.
R. Olson No. 1 Murchison, A. Litton Sur. R.U.
Texas Northern Oil Co. No. 1 Barton, J. Rogers Sur. Drlg. 2,623 ft.

Bexar County

Eckert & Sons No. 1 Stapper, Nontaya Sur. D.&A.; T.D. sd. 1,005 ft.
Edna May Oil Co. No. 1 Cassin, F. Rodriguez Sur. T.D. 1,349 ft.; set 7-in. csg. 1,138 ft.; completing.

Blanco County

H. T. Roe No. 4 Morrisey, Webb Sur. 91. S.D. 265 ft.

Brooks County

Mills Bennett Prod. Co. No. 1 Jones, 468 ft. N and E lines, Blk. 34, Sanchez Sur., La Rucia Gr. Drlg. sh. 3,373 ft.
Standard of Tex. No. 1 Mestina, Mestina Lse. No. 3. T.D. 6,786 ft.; perf. 2,380-2,400 ft.; tstd. mud.

Caldwell County

Fred Adams No. 1 Shinn, A. Tinney Sur. Drlg. 2,812 ft.
Artz et al No. 1 Withers, Wm. House Sur. D.&A. 1,696 ft.
Lanning & Coffield No. 1 Hanson, Guad. College Sur. T.D. 2,253 ft.; Edw. S.O.; set csg. 2,248 ft.; flwd. 100 B.P.D.; S.I.
McNeill Pet. Co. No. 1 Martindale, H. McNeill Sur. R.U.
L. H. Wilson No. 1 Wright, J. Roberts Sur. Drlg. sh. 1,667 ft.

Cameron County

Ruez-Morton No. 1 United Land Irr. Co., Lot 7, Blk. 402, El Jardin Subd. S.D. 7,516 ft.

Comal County

J. R. Yates No. 1 Heidrich, Heidrich ranch. R.U.

Dimmitt County

H. F. Wilcox No. 2 Light ranch, 330 ft. S and W lines, sec. 29, I.&G.N.R.R. Sur., Blk. A. Drlg. sh. 3,172 ft.
H. F. Wilcox No. 3 Light ranch, 330 ft. N and W lines, sec. 113, I.&G.N.R.R. Sur., Blk. A. R.U.

Duval County

Baltimore Drlg. Co. No. 1 Afflerbach, Sur. 342. Reported oil sd. 1,096-1,102 ft.; set csg.; W.O.C.
V. L. Blanchard No. 1 Benavides, Blk. 59, Sur. 238. Set csg. 510 ft.; W.O.C.
Hougen, Tr., No. 1 Patton, Sur. 148. S.D. 2,500 ft.
Humble O. & R. Co. No. 1 Davidson, 648-ac. tr., sec. 218. Drlg. csl. 195 ft.
Liberty Oil Co. No. 1 State, Sur. 216. T.D. 1,555 ft.; S.D.
Penn-Palangana Oil Co. No. 2 Schallert, Sur. 239. R.U.
Reynosa Oil Co. No. 1 Peters, 330 ft. N and W lines, SE¼, Sur. 37. Cg. 1,837 ft.
Standard Oil Co. of Texas No. 3 Gray Est., 330 ft. N and E line, sec. 170, M. E. Gussett Sur. D.&A. 2,852 ft.
Texas Canadian Oil Co. and Nelson No. 1 Luby Est., 330 ft. N line, 660 ft. W line, Blk. 10, Nelson Subd. Drlg. 4,114 ft.
Tide Water Associated Oil Co. No. 2 Foster, Sur. 200. Loc.
Tsesmalis & Shipman No. 2 Canales, C SE¼, Lot 75. Spd.
Woodley Pet. Co. No. 1 Parr, 100-ac. tr., San Andres Gr. Sd. 4,801-11 ft.; D.S.T. 4,790-4,811 ft.; rec. 250 ft. oil, 25 ft. S.W. in 15 min.; T.D. 6,010 ft.; P.B.; set 7-in. csg. 4,900 ft.; perf. 4,800-10 ft.; rec. 200 ft. oil; 100 ft. wtr.; 5 fourbles mud; W.P. 25 lbs.; washing in.

Edwards County

Dan Auld No. 1 Henderson, sec. 46, Blk. "E." M.I.M.
Amon G. Carter No. 1 Sweeten, SE¼, Blk. 2, Sur. 49. Drlg. sh. 2,932 ft.

Frio County

Amerada Pet. Corp. No. 1 Harrigan, Flores Sur. 306. Lost hole: T.D. 6,410 ft.; P.B. 5,720 ft.; D.S.T. 5,433-5,720 ft.; good blow 3 hrs.; treated with 3,000 gal. acd.; flwd. 25 min. and died; swbd.; reworking.

Goliad County

Goliad Oil Co. No. 2 Cole, lot 33, Goliad Town. Tr. Sur. Set protective csg. 4,500 ft.; S.D. 5,687 ft.; W.O.O.

Guadalupe County

Mason Altgelt No. 1 Schubert, Esnaurizer Sur. Top chalk 763 ft.; bailing oil.
R. T. Belcher No. 1 Fulshear, R. Smith Sur. D.&A.; T.D. Buda 2,310 ft.
Eddy et al No. 1 Smith, Hunter Sur. Drlg. 1,679 ft.
Felmont Oil Corp. No. 1 Anderson, 40-ac. tr., G. DeWitt Sur. R.U.
Moon O. & G. Co. No. 1 Penshorn, Vincente Duran Sur. Set 10-in. csg. 21 ft.; cg. 626 ft.

Hidalgo County

Dayle Smith No. 1 Fairbanks & Young, Blk. 44, Porc. 47. Cg. 2,315 ft.
Sulgrade Oil Co. No. 1 Mayer & Weill, Porc. 47. Drlg. sh. 923 ft.
Y. & B. Oil Co. No. 1 Waite, Tr. 382, Los Jidos Gr. Drlg. sh. 1,167 ft.

Jim Hogg County

Henry M. Brown No. 1 Gutierrez, sec. 22, Sh. 4, El Peyote Gr. Drlg. 357 ft.

French Oil Corp. No. 1 Vela, Sur. 573. Drlg. 1,923 ft.

Jim Wells County

Magnolia Pet. Co. No. 7 Seeligson, 10.433 ac. tr., Los Jaboncillos Gr. Sd. S.G. 6,488-6,503 ft.; D.S.T. 6,488-6,503 ft.; rec. 60 ft. dist.: 1,000 lbs. W.P. 10-min.; took short core; well blew out and burned; shut in.

Karnes County

DeGraff & Reele No. 1 Cochran, McConnel Lge. Tstg. sd. 1,348-68 ft.
Dinero O. & G. Co. No. 1 Kohler, 58.7-ac. tr., V. Blanco Sur. T.D. 4,000 ft.; rmg.
Ivan Howard No. 1 Moczygemba, Erasmo Seguin 5, League Gr. M.I.M.

Kendall County

Landon & Peffley No. 1 Seidensticker Sur. 257, Chorcon Gr. Drlg. L. 153 ft.

Kleberg County

Hinds Drlg. Co. No. 1 Murchison, Lot 6, Blk. 22, K.T.&I. Subd. D.&A. 6,018 ft.

Lee County

Jas. E. Pederson No. 1 Turner, David Hudson Sur. T.D. 6,132 ft.; swbg. wtr.; rainbow oil.

Live Oak County

Chas. Hanna et al No. 1 Wedding, 200-ac tr., Haughy Sur. Spd.
Ranco Oil Corp. No. 1 fee, 660 ft. NW and SW lines, Pointevent Sur. 3. R.U.

Maverick County

Rio Dev. Co. No. 4 State Bank & Trust Co., Sur. 2. Drlg. sh. 189 ft.
Wellington Oil Co. No. 1 Chittam, 330 ft. N line, 2,310 ft. W line, sec. 129, Blk. 7. Drlg. 1,087 ft.

McMullen County

Alabama Minerals Corp. No. 1 Gordon, SW¼, Sur. 127. M.I.M.
Harrison & Danvers No. 3 Claunch, M Hely Sur. T.D. sd. 1,074 ft.; set csg.; W.O.C.
Howell Oil Corp. No. 1 Martin, Sur. 213 S.D. 3,510 ft.
W. L. Hinds No. 1 Rhodes, NE¼, NW¼ sec. 54. Drlg. 1,817 ft.
Rowan & Nichols No. 1 Rhodes, NE¼ sec. 18, Seale & Morris Sur. Drlg. 1,811 ft.
Schimmel et al No. 2 Hagist, Sur. 467. Cor.; drlg. sd. 2,512 ft.
Pat Tinney No. 1 Rutherford, Blk. 17, Two Rivers Ranch Subd. Drlg. 93 ft.

Medina County

Frank Brown No. 1 Billhartz, 12 mi. E of Hondo. Drlg. 1,428 ft.

Nueces County

Gillock et al No. 2 Poenisch, Lot 11, sec 32. Drlg. 6,726 ft.
Seaboard Oil Corp. No. 1 Jurica, Blk. 32 Robertson Farm Trs. T.D. 7,006 ft.; D.&A.
Southern Minerals Corp. No. 1 River Bros., 80-ac. tr., sec. 301. Cg. 5,840 ft.
Sam E. Wilson No. 1 Herold, Lot 2, sec. 6, Bohemian Colony Subd., Enrique Villareal Sur. W.O.O.; S.D. 5,000 ft.

San Patricio County

Al Bobb No. 1 Green Est., 167.4-ac. tr., Williamson Sur.; (W.O.). Old T.D. 6,800 ft.; set 5-in. csg. 7,000 ft.; T.D. 7,299 ft.; swbg.
Danray Oil Co. No. 1 Davis, Tr. 5, Wm Boyd Sur. T.D. 6,606 ft.; reported sd. 6,530-40 ft.
Plymouth Oil Co. No. 1-A Odem, subd. 2 A. Herron Sur. Drlg. 5,865 ft.
Wellington Oil Co. No. 1-B Welder, SE¼ sec. 6, Cubage & Miller Subd., Garza Sur. Cg. 6,792 ft.

Starr County

Calderoni-James-Follette No. 1 Rodriguez Blk. 6, Sh. 56, Porc. 80. Set sur. csg 100 ft.; drlg. 1,267 ft.
Donroy Oil Co. No. 2 Ramos, Sur. 149. D.&A. 2,503 ft.
Gilcrease Oil Co. No. 3 Castillo, Walker Subd., Porc. 77. Drlg. 813 ft.
E. J. Pearl No. 1 de la Garza, Sur. 262. R.U.
Transwestern Oil Co. and Davenport No. 3 Slick, sec. 527. Drlg. 4,717 ft.

Webb County

R. S. Bolling No. 1 Fort Worth Natl. Bank, Sur. 466. M.I.M.
Eugene Garner No. 3 Saldivar, 150 ft. S and E lines, Blk. 12, Sur. 657. Drlg. 327 ft.
French Oil Corp. No. 3 Garcia, N½, Sur. 1121. Loc.
Simon, Grossman & Katz No. 1 Saldivar, 600 ft. W line, 760 ft. N line, Blk. 11, Garner Subd., Murrell Ranch Sur. 657. Drlg. 370 ft.
J. W. Magee No. 1 Garcia, Blk. 21, James Subd. Drlg. 912 ft.
Paul Meaders No. 1 Garcia, Sur. 338. Loc.

Willacy County

Ruez-Morton, Inc., No. 1 F. Armendias C Lot 9, Sh. 4, San Juan de Carricitos Gr. Drlg. 537 ft.
Ruez-Morton, Inc., No. 1 Johnson-Stillman, Lot 14, Blk. 25, Sh. 44, San Juan de Carricitos Gr. S.D. 643 ft.

Wilson County

R. C. Stanley No. 2 Heirholzer, R. Salinas Sur. Oil sd. 1,025-30 ft.; rng. squeeze job 1,031 ft.

Zapata County

Allison & Abrams No. 1 Vela, Sur. 249 Washing to T.D. 1,060 ft.
Harry Fansler No. 1 Gopher Trust Est., C Blk. 15, Sh. 6. R.U.
O. W. Killam No. 1 Bruni, Blk. 93, Ranchito Pasture, Borrego Gr. Sd. 1,490-1,510 ft.; S.O.; D.&A. 4,372 ft.
Ray L. Martin No. 1 Vela, Blk. 44, Sh. 2, El Grullo Gr. Drlg. 477 ft.
Eugene Mays No. 1 Flores, Blk. 198, Doty Subd., Charco Redondo Gr. M.I.M.

S. W. TEXAS PROVEN

McCampbell—Aransas-San Patricio Counties

Atlantic Ref. Co. No. 1-B Guarantee, Blk. 13. Perf. 7,100 ft.; sd.; washing in.
Atlantic Ref. Co. No. 5-C McCampbell, Lot 12, Blk. 39. Pits.
Atlantic Ref. Co. No. 6-C McCampbell, Lot 3, Blk. 42. Cg. 7,125 ft.
Atlantic Ref. Co. No. 1-D McCampbell, Lot 16, Blk. 39. T.D. 7,120 ft.; P.B. and set csg. 6,612 ft. (cor.); perf. 6,544-47 ft.; recmtd. to reperf.
Atlantic Ref. Co. No. 2-A Murray. Set csg. on 7,100-ft. sd.; W.O.C.
Atlantic Ref. Co. No. 2-B Murray, Lot 13, Blk. 12. Spd.
Atlantic Ref. Co. No. 1-C Murray, Lot 6, Blk. 38. Drlg. 1,516 ft.
Atlantic Ref. Co. No. 2 Scrivener, Lot 9, Blk. 11. Cg. 7,065 ft.
Buckingham Oil Co. No. 5-A McCampbell, Lot 4, Blk. 39. Drlg. 4,736 ft.
Buckingham Oil Co. No. 12-A McCampbell, Blk. 42. Drlg. plugs to perf.; sd. 7,091-7,144 ft.; set csg. 7,144 ft.
Buckingham Oil Co. No 4-B McCampbell, Lot 16, Blk. 40. Sd. 7,332-48 ft.; O.&G.; comp.; jetting 65 B.P.D.
Buckingham Oil Co. No. 14-A McCampbell, Blk. 42. Drlg. plugs to perf.
Buckingham Oil Co. No. 1-C McCampbell, 33.8-ac. tr., Blk. 27. Cg. 7,142 ft.
Danrey Oil Co. No. 1 Hay Est., Lot 13, Blk. 8. Perf. 7,096-7,102 ft.; washing.
Graham & Buckingham Oil Co. No. 1-D Porterfield, Lot 11, Blk. 9. M.I.M.
Landreth Prod. Co. No. 5-A McCampbell, Lot 4, Blk. 39. R.U.
Neill & Peterson No. 1-A McCampbell, Lot 1, Blk. 43. M.I.M.
Peach Tree Oil Co. No. 1 Porterfield, Lot 16, Blk. 10. Drlg. 5,193 ft.
Rutherford Oil Corp. No. 1 Conn-Brown, Lot 14, Blk. 10. Cg. 6,785 ft.
Rutherford Oil Corp. No. 1 Yarbrough, Lot 2, Blk. 37. R.U.
Shasta Oil Co. No. 3 Davis, Lot 14, Blk. 9. R.U.

Plummer—Bee County

W. C. McBride No. 2 Schneider, 600 ft. N of No. 2, Sur. 3. Sd. 3,030-69 ft.; set csg.; W.O.C.

West Tuleta—Bee County

Salt Dome Oil Co. No. 3 Tuleta Merchantile Co., SW¼, sec. 10, Wragley Subd., Uranga Gr. Drlg. 1,715 ft.

Alta Mesa—Brooks County

Standard of Texas No. 5 Mestina, Lease No. 1. 7-in. csg. set 3,220 ft.; T.D. 5,505 ft.; squeeze job 4,513-30 ft. W.O.C.
Standard Oil Co. of Texas No. 3 Garcia, Lse. 3. Set csg. 2,529 ft.; T.D. 2,555 ft.; completing.
Standard Oil Co. of Texas No. 8 Mestina, Lse. No. 1. Drlg. 2,559 ft.

Alta Verde—Brooks County

Bishop & Woods No. 1 Maupin, Sur. 311. T.D. oil sd. 1,000 ft.; show little oil; tstg.
Dick Young No. 5 Singer, Blk. 12, Sur. 312 (W.O.). T.D. 1,447 ft.; S.D.; W.O.O.

Branyon—Caldwell County

Adams & Richards No. 2 Flowers, D. Cooper Sur. Drlg. 517 ft.
Fred J. Adams No. 5-B Ellison, Cooper Sur. Set csg. 1,955 ft.; W.O.C.
Adams & Richards No. 1 Flowers, D. Cooper Sur. Comp.; 120 B.P.D. on pmp.; T.D. 2,171 ft.
Artz & Horner No. 4 Brown, J. R. Miller Sur. Drlg. 1,453 ft.
Baker & Freeman No. 3 Corder, J. A. Neil Sur. Prep. test 2,176 ft.
Cargill et al No. 1 Patton, J. R. Miller Sur. Drlg. 1,917 ft.
Martell Pet. Co. No 2. Clark, J. R. Miller Sur. Drlg. 1,815 ft.
Martell Pet. Co. No. 1 Young, J. R. Miller Sur. Recmtg. 2,311 ft.
Memphis Nat. Gas Co. No. 4 Young, J. R. Miller Sur. Set csg. 2,087 ft.; W.O.C.
Sherman Nelson No. 2 Clark, Neill Sur. T.D. 2,181 ft.; set csg. 1,907 ft.; comp.; 698 B.P.D.
Sherman Nelson No. 2 Swearingen & Clark, John Neil Sur. Drlg. sh. 1,840 ft.
Universal O. & G. Co. No. 2 Callihan, Miller Sur. Drlg. sh. 519 ft.
Whisenant & Trenchard No. 2-A Magee, Neill Sur. Drlg. 1,917 ft.
R. S. Wyrick No. 3 Magee. Set csg. 2,060 ft.; W.O.C.

Buchanan—Caldwell County

Judge Bros. No. 1 Medlock, J. A. Neill Sur. R.U.
Kalb. Tr., No. 1 Bozarth, Wm. Spillar Sur. Drlg. 2,052 ft.

Luling—Caldwell County

Spokane O. & G. Co. No. 1 Hibbits, J. Henry Sur. Set surf. csg. 60 ft.; W.O.C.

Salt Flat—Caldwell County

Chiquita Oil Co. No. 5 Hickman, G. Hinds Sur. Set csg. 2,639 ft.; W.O.C.
Pagenkopf & Jamieson No. 2 Hanson, Hinds Sur. Swbg. 2,657 ft.

Charamousca—Duval County

N. V. Duncan No. 13 Worden-Draught, Sur. 151. Drlg. 936 ft.

Colmena—Duval County

Conservative Oil Co. No. 1 D.C.R.C., S½, Sur. 47. Set csg. 1,483 ft.; reperf. 1,480-90 ft.; T.D. 1,508 ft.; comp.; 20 B.P.D.
Humble O. & R. Co. No. 8-D D.C.R.C., Sur. 585. Set csg. 1,438 ft.; comp.; 187 B.P.D. Comp.; 215 B.P.D.; sd. 3,605-07 ft.

Driscoll—Duval County

Continental Oil Co. No. 16-A, Sur. 448. T.D.; sd. 2,807 ft.; set csg.; W.O.C.

Government Wells—Duval County

Central Prod., Inc., No. 4-A Wendt. Drlg. plugs in sd. 2,285-2,307 ft.

Hoffman—Duval County

Bridwell Oil Co. No. 4 Green, Sur. 118. Sd. 2,702-08 ft.
Cox & Hamon No. 17 Green-Yoakum, Sur 118. Sd. 2,738-43 ft.; comp.; 49 B.P.D.; ¼-in. ck.
Duval Oil Corp. No. 10-A Hoffman, Sur. 118. Cg. 2,065 ft.
Humble O. & R. Co. No. 1 Casas, Sur. 124. Prep. test 2,885 ft.

Kohler—Duval County

Bunn Bros. & Coates No. 6-B Peters, Sur. 29. Drlg. sh. 170 ft.

Labbe—Duval County

Humble O. & R. Co. No. 9 Roos, sec. 119. T.D.; sd. 2,807 ft.; set casing; W.O.C.

Loma Novia—Duval County

Humble O. & R. Co. No. 23-C Welder, Sur. 554. Drlg. sh. 1,873 ft.

Loma Vista—Duval County

Wellington Oil Co. No. 4-A Welder, 263-ac. tr., Sur. 103. Cg. 2,803 ft.

North Sweden—Duval County

Argo Oil Co. No. 5 Carrillo, Blk. 9, Sweden Farm Lots. Drlg. plugs; T.D.; oil sd. 4,776 ft.
Argo Oil Co. No. 6 Carrillo, 79.93-ac. tr., Blk. 9. Set csg. 559 ft.; W.O.C.
Arkansas Fuel Oil Co. No. 3 Rossi, 100-ac. tr., Blk. 10. T.D. 4,788 ft.; comp.; 336 B.P.D.; ¼-in. ck.; sd. 4,770-78 ft.
Benedum & Trees Oil Co. No. 5 Puig, San Andres Gr. Set csg. 950 ft.; W.O.C.
Bridwell Oil Co. No. 1 Anciro, 152-ac. tr., Blk. 19. Reworking.
Bridwell Oil Co. No. 1 Anciro, 152-ac. tr., Lot 19. Pits.
Frank Gravis No. 2 Puig, sec. 24, San Andres Gr. Sd. 4,809-13 ft.; setting csg. 4,803 ft.
Hiawatha Oil Co. No. 1 Parr, 75-ac. tr., San Andres Gr. T.D. 4,730 ft.; comp.; 125 B.P.D. on ⅛-in. ck.; sd. 4,715-29 ft.
Hiawatha Oil Co. No. 2 Parr, 330 ft. N and W lines, lse., San Andres Gr. No. 24. Drlg. 587 ft.
Navarro Oil Co. No. 1 Owen, Blk. 19. R.U.
Russ Pet. Co. No. 4 Farias, sec. 9. Drlg. sh. 2,097 ft.
Parr Oil Co. No. 7 Puig, 150-ac. tr., San Andres Gr. Perf. 4,820-23½ ft.; comp.; 92.7 B.P.D.; sd. 4,720-32 ft.; T.D. 4,841 ft.
Standard Oil Co. of Kansas No. 3 Parr, 1,650 ft. N line, 330 ft. W line, San Andres Gr. Set csg. 4,755 ft.; sd. 4,759-73 ft.; comp.; 187 B.P.D. on ⅛-in. ck.
Standard Oil Co. of Kansas No. 8 Parr, 80-ac. tr., San Andres Gr. Drlg. 750 ft.
Standard Oil Co. of Kansas No. 3 Rossi, sec. 10, Sweden Farm Lots. T.D. 4,793 ft.; set csg. 4,773 ft.; prep. drlg. plug.
Standard Oil Co. of Kansas No. 8 Rossi, Santos Flores Gr. No. 25. R.U.
Standard Oil Co. of Kansas No. 1 Southland Life, Flores Gr. R.U.
Standard Oil Co. of Kansas No. 2 Walstad, Lot 9, Sweden Farm Lots. Sd. 3,903-23 ft.; D.S.T. rec. 150 ft. fluid 75% oil, 25% mud at 400 lbs. W.P. 6½ min.; T.D. 4,804 ft.; set csg. 4,784 ft.; completing.

Palangana—Duval County

Penn Palangana Oil Co. No. 1 C. K. Gravis Sur. 250. Cg. 5,689 ft.
Tuttle & Trahan No. 1 Megerle, Sur. 245. D.&A. 1,110 ft.

Piedra Lumbre—Duval County

Magnolia Pet. Co. No. 20 D.C.R.C., Sur. 100. Comp.; 93 B.P.D.; sd. 1,986-2,002 ft.; T.D. 2,003 ft.
Sarnosa Oil Corp. No. 16 Weil, 300-ac. tr., Sur. 130. Drlg. 2,026 ft.

Seven Sisters—Duval County

A. J. Brinkoeter No. 3-B Rodriguez, Sur. 212. R.U.
S. and D. Daube No. 36 Campos, Sur. 224. R.U.
W. D. Daube & Co. No. 35 Campos, Sur. 224. Comp.; 64 B.P.D.; sd. 2,668-2,715 ft.
Humble O. & R. Co. No. 22 Dowdy-fee, sec. 272. T.D. 2,554 ft.; set csg.; W.O.C.
Humble O. & R. Co. No. 23 Dowdy, Sur. 272. M.I. rig.

Thomas-Lockhart—Duval County

Lockhart Bros. No. 1 Parr, Sur. 277. D.S.T. 4,688-98 ft.; rec. 400 ft. mud, sd. and dist. in 45 min.; 40 lbs. W.P.; T.D. 5,800 ft.; P.B. 4,688-4,707 ft.; comp.; 75 B.P.D. on ⅛-in. ck.

Pearsall—Frio County

Amerada Pet. Corp. No. 8 Haiff & Oppenheimer, S. A. Ditch Sur. 1,104 (W.O.) Set 7-in. protective csg. 10,344 ft.; prep. drill deeper.

Darst Creek Extn.—Guadalupe County

Diamond Half Oil Co. No. 1 Anderson, Darst Sur. T.D. L. 2,571 ft.; comp.; 356 B.P.D.
Kenedy & Crowley No. 1 Anderson, J. R. Robinson Sur. R.U.
Texas Co. No. 8 Anderson, J. R. Robinson Sur. R.U.

Manford—Guadalupe County

Atlantic Oil Inv. Corp. and Blackmar No. 1 Huff, Hodes Sur. T.D. 2,344 ft.; drlg. plugs.

LaBlanca—Hidalgo County

Atlantic Ref. Co. No. 1 Lewis, Blk. 214. Set csg. 8,600 ft.; perf. 8,100 ft.
Dee Davenport No. 1 Swallow, Blk. 215 T.D. 7,564 ft.; P.B. 4,398 ft.; sdtrkd.; W.O.C.

Samfordyce—Hidalgo and Starr Counties

Kingwood Oil Co. and E. A. Graham No. 2 Yturria, 300 ft. E of No. 1, Porc. 100. R.U.

Sandia—Jim Wells County

Roy Gaines No. 1 Wade, Blk. "C," Bode Subd., Wade ranch. Set surf. csg.; W.O.C.
L. L. Smith et al No. 1 Allen, Wade ranch. Spd.

West Premont—Jim Wells County

Howard Presnall No. 1 Holmes, Lots 59 and 70, Blk. 76. Spd.

North Pettus—Karnes County

Magnolia Pet. Co. No. 17 Porter, B.&B. Sur. 23. Bailing; T.D. 3,708 ft.

South Burnell—Karnes County

Dirks Bros. No. 1 Ruhmann, 177-ac. tr., Ballard Sur. T.D. oil sd. 3,624 ft.; set 5½-in. csg.; flwg. into stg.; no gauge.
Luling O. & G. Co. No. 2 Boyce, Ballard Sur. Oil sd. 3,671-76 ft.; D.S.T. 3,657-76 ft.; W.P. 90 lbs.; rec. 800 ft. oil and 90 ft. S.W.; cg. 7,680 ft.

Kingsville—Kleberg County

Harry Edwards No. 1 Noack, Lot 4, Blk. 50, Subd. of town of Uriah. Drlg. sh. 2,318 ft.
Humble O. & R. Co. No. 10 Kleberg, 660 ft. W of No. 6 Hughes, Blk. 39. Drlg. sh. 2,928 ft.

Exzell—McMullen County

Edwin M. Jones No. 6 Ezzell, NW¼ SE¼, Ragland Sur. 20. (Cor.); drlg. 2,431 ft.
E. M. Jones No. 8 Ezzell, Russell Sur. T.D. 1,573 ft.; perf. 1,543-53 ft.; S.D.; W.O.D.
Edwin M. Jones No. 10 Ezzell, H. Russell Sur. T.D. 1,533 ft.; W.O.P.

Loma Alta—McMullen County

J. T. Lanier No. 1 Hagist, SE¼, N½, Sur. 481. Drlg. 1,923 ft.

Agua Dulce—Nueces County

Conroe Drlg. Co. No. 1 Hagan & Stewart, sec. 206, Bishop Subd. T.D. 6,800 ft.; tried to blow out; D.S. stuck.
Texon Drlg. Co. No. 2 Elliff, 3,054-ac. tr., Longorio Sur. R.U.
United Prod. Co. No. 1 Harvey, 1,100 ft. W line, 1,050 ft. N line, tr., M. Garza Sur. Set 5½-in. csg. 7,457 ft.; pulling 5½-in. csg.
United Prod. Co. No. 3-A Rivers, sec. 9, Peters Subd. Drlg. hd. sd. 7,989 ft.
United Prod. Co. No. 1 Schroeder, sec. 87, Paul Subd., Driscoll ranch. Drlg. sdy. sh. 7,714 ft.

Clara Driscoll—Nueces County

Houston Oil Co. No. 3 Sevier, 77.1-ac. tr., Quadrilla Irr. Co. Sur. T.D. sd. o.o. 3,903 ft.; D.S.T. 3,888-3,903 ft.; rec. 70 ft. mud and very little oil; 11 min.

Flour Bluff—Nueces County

Humble O. & R. Co. et al No. 1 Chapman, Lot 5, Blk. 41. Drlg. sh. 6,600 ft.
Humble O. & R. Co. et al No. 3 Cordz, Lot 14, Blk. 48. Drlg. plug in csg. 6,662 ft.; comp.; 154 B.P.D. on ⅛-in. ck.
Humble O. & R. Co. et al No. 6-B Miller, sec. 48. Drlg. 1,060 ft.
Humble O. & R. Co. No. 2 Roberdeau, Lot 7, Blk. 49. T.D. 6,650 ft.; comp.; 179 B. P.D. on ⅛-in. ck.; sd. 6,631-50 ft.
Humble O. & R. Co. et al No. 3 Roberdeau, Lot 6, Blk. 49. Drlg. sh. 1,058 ft.
Humble O. & R. Co. et al No. 4 Robertson, Blk. 56. Set csg. 6,671 ft.; comp.; 115 B.P.D. on ¼-in. ck.; sd. 6,651-71 ft.
Humble O. & R. Co. No. 1 Swan, Lot 1, Blk. 54. Drlg. plugs 6,661 ft.
Humble O. & R. Co. et al No. 1 Turcott, Lot 12, Blk. 56. Drlg. sd. 5,283 ft.
Humble O. & R. Co. et al No. 7 Webb, Lot 6, Blk. 47. T.D. 6,670 ft.; comp.; 128 B.P.D.; 7/64-in. ck.

London—Nueces County

Wellington Oil Co. and Seaboard Oil Corp. No. 1-B Lehman, NW¼, SE¼, sec. 25. Drlg. 689 ft.

Luby—Nueces County

Seaboard Oil Corp. No. 1 Schaeffer, Blk. 3, Sh. 2, Luby Subd. Drlg. 6,637 ft.
Stanolind O. & G. Co. No. 1 McCann, 565.3-ac. tr. Drlg. 3,683 ft.

Saxet Heights—Nueces County

Wm. Brady No. 2 Whalen, Villareal Sur. R.U.
W. H. Harrison No. 3 McConnell, Blk. 5, Oak Park Addn. W.O.C. csg. 307 ft.
Sam E. Wilson, Jr., No. 1 Moody, C Lot 14, Ellendale Gardens No. 2. Drlg. 2,755 ft.

Saxet—Nueces County

C. Andrade No. 8 Frank, 48-ac. tr., Sur. 500. Cg. 6,689 ft.
R. B. Bryant No. 8 Frank, 40-ac. tr., Sur. 500. Sd. 6,919-51 ft.; perf. csg. 6,932-36 ft.; washing in.
Bentex Oil Co. No. 3 Harmon, Sur. 416. Drlg. 257 ft.
Bryant No. 9 Frank, 40-ac. tr., Sur. 500. Drlg. 4,017 ft.
Bryant & Howell No. 2 Kocurek, 57.4-ac. tr. Sur. 25. Perf. 4,105-10 ft.; comp.; 72 B.P.D.
Bryant & Howell No. 4 Kocurek, 25-ac. tr., Smith Sur. 25. R.U.

Bryant & Howell No. 4 Plachy, Sur. 25. Sd. 4,155-75 ft.; set csg.; drlg. plugs.
Crown Central Pet Corp. No. 5 Page, 75-ac. tr. Drlg. 4,017 ft.
Donico Prod. Co. No. 1 Donigan, 80-ac. tr., sec. 7, Rge. 6. Set csg. 4,900 ft.; perf. 4,551-55 ft.; washing in.
Donico Prod. Co. No. 6 Donigan, 80-ac. tr., sec. 7, Rge. 6. Drlg. below surf. csg
L. Glasscock No. 1-A Johns, McGregor Sur. 582. Drlg. 3,813 ft.
L. Glasscock No. 1-C Johns, McGregor Sur. 582. D.S.T. 6,897-6,907 ft.; rec. 400 ft. oil 8 min.; sd. 6,892-6,909 ft.; set csg. 6,892 ft.; comp.; 120 B.P.D.; ½-in. ck.
Tom Graham No. 5 Harmon, 34-ac. tr., Sur. 416. Cg. 6,915 ft.
Greta Oil Corp. No. 2 Bliss, 25-ac. tr., Sur. 406. R.U.
Hiawatha Oil Co. No. 12 Hutchins Stillwell, Blk. 34, Sheppard Farm Lots T.D. 5,838 ft.; set csg.; perf. 5,815-20 ft.; comp.; est. 200 B.P.D.; 5/32-in. ck.
Hiawatha Oil Co. No. 13 Hutchins-Stillwell, Blk. 30, Sheppard Farm Lots. Set csg. 150 ft.; W.O.C.
Hiawatha O. & G. Co. No. 6-B Smith, Blk. 35, Sheppard Farm Lots. Sd. 6,906-20 ft.; T.D. 6,937 ft.; set csg.; comp.; 351 B.P.D.; perf. 6,912-16 ft.
Houston Oil Co. No. 6 Harrell, Blk. 13. Sheppard Farm Lots. Pulling lnr. and screen 4,723 ft.
Houston Oil Co. No. 6-A Harrell, Blk. 27. Sheppard Farm Lots. Comp.; 146 B.P. D. on ⅝-in. ck.; sd. 4,395-4,405 ft.; 7-in. csg. at 4,395 ft.
Houston Oil Co. No. 7-A Harrell, sec. 27, Sheppard Farm Lots. Set csg. 205 ft.; W.O.C.
Houston Oil Co. No. 3 Isensee, Blk. 11 Sheppard Farm Lots. Rmg. to D.S.T. 4,844 ft.
Kepley Prod. Co. No. 6 Donigan, 100-ac. tr., sec. 7, Rge. 5. Drlg. 4,073 ft.
Maryland Corp. No. 1 Gallagher, 110.5-ac. tr., Smith Sur. 25. Set csg. 4,252 ft.; perf. 4,110-14 ft.; S.W.; squeeze job.
Morgan & Chapman Minerals Corp. No. 9 Morgan-Clark, NE¼, Sur. 405. Drlg. 6,765 ft.
Phillips Pet. Co. No. 6 Hutchins, Blk. 29 Sheppard Farm Lots. Sd. 6,944-58 ft.; set csg. 6,987 ft.; perf. 6,927-35½ ft.; recmtg.
Phillips Pet. Co. No. 7 Hutchins, 60-ac. tr., Sheppard Farm Lot 29. Drlg. 5,596 ft.
Potter & Snowden No. 1 Taggert, Blk 5, Sur. 401. S.D. 6,004 ft.
Renwar & Maryland No. 1-A Rand Morgan, Sur. 415. O.W.W.O.; old T.D. 5,825 ft.; T.D. 6,701 ft.; sd. 6,685-6,701 ft.; set csg.; perf. 6,695-6,700 ft.; clg. in pits.
Republic Nat. Gas Co. No. 20 Dunn, Blk. 38, Sheppard Farm Lots. Cg. 6,929 ft.
Richardson Pet. Co. No. 21 Cain & Sechrist, Blk. 23, Russell Farm Lots. Set csg. 4,851 ft.; W.O.C.
Richardson Pet. Co. No. 6 Perkins-LaGasse, 20-ac. tr., Sheppard Farm Lot 22. Tstg. sd. 4,710-16 ft.
Richardson Pet. Co. No. 12 Quiros, Sheppard Farm Lot No. 26. Drlg. 5,112 ft.
Richardson Pet. Co. No. 7 Sedwick, 124-ac. tr., Sur. 311. T.D. 6,945 ft.; rmg.
Richardson Pet. Co. No. 10 Sedwick, Sur 312. Sd. 4,842-62 ft.; set csg. 4,889 ft.; W.O.C.
Ben F. Smith No. 1 Ocker, Villareal Sur. Set csg. 505 ft.; W.O.C.
Southern Minerals Corp. No. 5 Elder, 60-ac. tr., Sur. 311. Cg. 4,883 ft.
T. & T. Oil Co. No. 5 Cain & Sechrist, 30-ac. tr., Lot 23, Russell Farm Lots. Sd. 4,865-72 ft.; rmg. tbg.
Texon Drlg. Co. No. 8 Carter-Ocker-Till, Sur. 316. T.A. 4,900 ft.
Texon Drlg. Co. No. 11 Ocker, Surs. 402 and 316, 174.21-ac. tr. Comp.; 236 B.P. D.; sd. 4,437-40½ ft.; set 7-in. csg. 4,436 ft.; W.O.C.
Texon Drlg. Co. No. 6 Scoggin, 50-ac. tr., Sur. 315. R.U.
Warner Quinlan Co. of Tex. No. 5 Isensee, Blk. 1, Sheppard Farm Lots. Set surf. csg. 946 ft.; W.O.C.

Sullivan—Nueces County

Lockhart et al No. 1 O. Purl, Lot 2, sec. 7, Ross Peters Subd. No. 2. Sd. 7,032-52 ft.; P.B. and sdtrk.; fsg. in sdtrkd. hole 6,421 ft.

Midway—San Patricio County

Phillips Pet. Co. No. 2 Ivey, sec. "K," Paul Subd. Set csg. 5,394 ft.; perf. 5,337-39 ft.; comp.; 165.5 B.P.D. on 9/64-in. ck.
Phillips Pet. Co. No. 3 Ivey, sec. "K," Pauls Subd. M.I.M.
Phillips Pet. Co. No. 2 Schmidt, sec. 83. Set csg. 5,389 ft.; perf. 5,338-40 ft.; tstd. S.W.; P.B. to reperf.
Phillips Pet. Co. No. 3 Schmidt, sec. 81. M.I.M.
Sun Oil Co. No. 1 Coggin, sec. 82. M.I.M.

Plymouth—San Patricio County

Plymouth Oil Co. No. 80-C Welder, sec. 70. Drlg. 5,516 ft.
Plymouth Oil Co. No. 81-C Welder, sec. 70. No report.
Sun Oil Co. No. 3 Roundtree, sec. 34, Lot 4. Perf. 5,636-37 ft.; completing.

Taft Field—San Patricio County

Humble O. & R. Co. No. 27 Mayo, 320-ac. tr., Ottman Sur. Drlg. hd. sd. 3,865 ft.

Barbacoas—Starr County

K. E. Merren No. 1-A S.C.C.C., Blk. 34 Lambeth Subd., Porc. 89. Set csg. at T.D. 5,640 ft.; W.O.C.
H. Mode No. 1 Starr County Cattle Co., Blk. 18, Jefferies Lambeth Subd., Porc. 89. Cg. 2,531 ft.

Cuevitas—Starr County

Sun Oil Co. No. 13-A Guerra, "A" Lse., Las Cuevitas Sur. Drlg. 1,987 ft.

Ricaby—Starr County

Dodd, Tr., No. 5 Wood Est. D.&A. 900 ft.
Dodd, Tr., No. 6 Wood Est., Porc. 84. R.U.

El Tanque—Starr County

Sun Oil Co. No. 3 Wardner, Porc. 84. Sd. 1,761-72 ft.; T.D. 1,777 ft.; tstg.

Roma—Starr County

Texas Co. No. 6-A Guerra, Sh. 305-D. Porc. 67. Drlg. plugs in csg. at 3,650 ft.

Killam—Webb County

C. H. Bailey No. 3 Garcia, Owens Sur. 786. Sd. 2,040½-41 ft.; set csg.; W.O.C.
Humble O. & R. Co. No. 7 Laurel Bros., Sur. 333. Set csg. 2,930 ft.; sd. 1,985-92 ft.; comp.; 7.5 B.P.H. on pmp.
O. W. Killam No. 10 Garcia, Sur. 337. Comp.; 25 B.P.D.; 5% S.W.; T.D. 2,027 ft.
O. W. Killam No. 11 Garcia, Owens Sur. 786. Sd. 2,012-15 ft.; set csg.; comp.; 25 B.P.D.; T.D. 2,026 ft.
Mills Bennett Prod. Co. No. 1 Garcia, 80-ac. tr., Sur. 786. Gas sd. 1,970-75 ft.; tstg. oil sd. 1,977-82 ft.; P.B. 2,017 ft.; set csg.; W.O.C.

O'Hern—Webb County

Magnolia Pet. Co. No. 30 Benavides, Blk. 15, O'Hern & Secord Subd. Completing 2,878 ft.
Magnolia Pet. Co. No. 31 Benavides, Blk. 26. M.I.M.
J. J. O'Hern No. 8-C Benavides, S½, Blk. 25, El Mesquite Gr. R.U.
Starr Dev. Co. No. 1 Benavides, 330 ft. N and W lines, Sur. 173. M.I.M.
Sun Oil Co. No. 12 Benavides, Blk. 509. Drlg. 2,607 ft.

Olton—Webb County

J. R. B. Moore No. 2 Garcia, 670 ft. E line, 220 ft. N line, Sur. 458. Drlg. 167 ft.

LaSal Vieja—Willacy County

Shell Pet. Corp. No. 1 Yturria, Sh. 64, Carricitos Gr. (W.O.); set csg. 7,630 ft.; T.D. 10,286 ft.; P.B. 5,129 ft.; perf. 7,575-7,600 ft.; D.&A.
Shell Pet. Corp. No. 2 Yturria, Sh. 64, Carricitor Gr. R.U.

Escobas—Zapata County

Dulup Oil Co. No. 26 Trevino, Sur. 412. Comp.; 12 B.P.D. on pmp.; T.D. 1,260 ft.
Nordan & Morris No. 11 Bustimante, Sh. 33, Fansler Part. Comp.; 21 B.P.D.; T.D. 1,173 ft.
Nordan & Morris No. 30 Bustimante, Sh. 33, Fansler Part. R.U.
B. W. Roscoe No. 19 Bustimante, S½, Sh. 33, Fansler Part. R.U.
B. W. Roscoe No. 33 Bustimante, Sh. 33, Fansler Part. Sd. 1,167-71 ft.; set csg.; W.O.C.
B. W. Roscoe No. 34 Bustimante, Sh. 33, Fansler Part. Comp.; 22 B.P.D.; T.D. 1,157 ft.
Texas Co. No. 104 Jennings, Cerrito Blanco Gr. Set csg. 1,271 ft.; comp.; 60 B.P.D.; T.D. 1,271 ft.
Texas Co. No. 105 Jennings, Cerrito Blanco Gr. R.U.

Haynes—Zapata County

J. P. Nash No. 27 Haynes, Blk. 7, Haynes Subd. Sd. 1,080-84½ ft.; T.D. 1,099 ft.; comp.; 30 B.P.D.
J. P. Nash, Tr., No. 28 Haynes, Blk. 7, Haynes Subd. Drlg. 859 ft.

NORTH TEXAS WILDCATS

Archer County

O. P. Darsey No. 1 J. T. Longley, sec. 1839, T.E.&L. Sur. Tstg. S.S.O. 951-53 ft.; P.O.P.
T. G. McCurdy No. 2 M. F. Martin, H. Grooms Sur. A-155. Fishing 980 ft.

Clay County

W. Gant No. 4 C. M. Worsham, sec. 38. G. P. Meade Sur. 6⅝-in. 3,915 ft.; O.S. 3,923-32 ft.; tstg.

Collin County

F. Jones No. 1 Sherley, G. Morrison Sur. S.D.O. 3,003 ft.

Cooke County

Benton & Holmes No. 1 Gibson, J. English Sur. A-345. S.D.O. 3,010 ft.
Denver P. & R. No. 1 J. M. Pearce, S. C. Atkinson Sur. A-10. Pits.
Kiel & Kiel No. 1 Sears, Barnett Sur. L. 1,037-1,090 ft.; tstg.
L. A. McWhirter, tr., No. 1 W. J. Davidson, Geo. Dooley Sur. A-301. S.D.O. 715 ft.
F. W. Merrick, Inc., No. 1 Redman, J. W. Drummond Sur. Drlg. 1,500 ft.
Texas Co. No. 1 J. F. Marshall, A. Burns Sur. A-49. S.D.O. 6,015 ft.

Denton County

California Ref. Co. No. 1 W. & S. Life Ins. Co., B.B.B.&C. Sur. A-783. S.S.O. 1,461-65 ft; 6⅝-in. 1,460 ft.; W.O.C.; S.D.O.; drk. blown down.
Manning & Moore No. 1 Dora Ratchford, J. Walters Sur. T.D. 2,102 ft.; recmtg. 6⅝-in. 1,910 ft.
Scroggins et al No. 1 S. M. Freeman, Bradshaw Sur. A-104. S.S.O. 1,630-40 ft.; will test.

Foard County

J. B. Baker, Jr., No. 1 J. F. Long, sec. 295, H.&T.C. Sur., Blk. A. Drlg. 500 ft.
O. P. Burnham No. 1 Ward, sec. 21, H.& T.C. Sur., Blk. 8. Drlg. 1,750 ft.

Grayson County

Denver P. & R. Co. No. 1 Cannon, A. Berry Sur. A-130. Cmtd. 6⅝-in. 2,388 ft.; S.S.O. 2,388-95 ft.; tstg.

Montague County

Montague Oil Co. et al No. 1 J. A. Brite, sec. 2882, T.E.&L. Sur. Set 6-in. 3,927 ft.; S.S.O. 3,927-32 ft.; W.O.C.
J. W. Sorrell et al No. 1 J. E. Walthall, S. H. Smith Sur. A-662. S.D. 2,000 ft.
Ventex Investments, Ltd., No. 1 S. E. Bell, sec. 11, M.E.P.&P. Sur. T.D. 3,220 ft.; S.D. water.

Wichita County

Golding & Cochran No. 1 Mrs. Grace Jennings, sec. 12, H.T.&B. Sur. S.S.O. 1,584-97 ft.; tstg.
W. B. Hamilton No. 1 Mrs. M. Parker, M. Ramsey Sur. A-471. Drlg. 275 ft.
Jones & Cowden No. 1 Perkins & Cullum, sec. 21, D.C.S.L. Sur. S.S.O. 1,618-22 ft.; tstg.
LeBus No. 1 J. F. Miller, W. R. Eaves Sur. A-447. Drlg. 1,000 ft.
W. B. Omohundro No. 1 First Natl. Co., sec. 28, W.V.F.L. Sur. Drk.
W. B. Omohundro No. 1 J. A. Kemp, Blk. 52, W.V.F.L. Sur. Drlg. 2,000 ft.
E. J. Stump No. 1 M. P. Bishop, L. Netherley Sur. A-240. Set surface pipe and S.D.

Wilbarger County

Barry & Hayes No. 1 McGill, sec. 3, Blk. 9, H.&T.C. Sur. Drlg. 2,100 ft.
W. W. McDonald No. 3 Waggoner A, sec. 26, H.&T.C. Sur. Testing lime 3,638-54 ft. with acid; P.B. and tstg. S.S.O. 3,-117-25 ft.

Wise County

Latex Oil Co. No. 1 C. R. Smith, J. Couch Sur. A-104. Showing gas 3,843-45 ft.; coring ahead.

Young County

H. J. Cox No. 1 W. T. Donnell, J. M. Smith Sur., sec. 1-7-1879. S.D.O. 1,810 ft.
Eppenauer Drlg. Co. No. 1 J. B. Hazelton, J. Harmon Sur. A-1607. Drlg. 2,750 ft.
T. D. Humphrey No. 1 S. R. Ragland, T. B. Kuykendall Sur. Drlg. 3,100 ft.
Lupton & Long No. 1 W. I. Gilmore, J. Gilmore Sur. A-2135. Drlg. 2,370 ft.; drk. down.
H. Zweifel No. 1 R. D. Sewell, M. Case Sur. A-1402. Gas sd. 3,752-4,050 ft.; tested 2,750,000 ft. gas; 5-in. cmtd. 4,333 ft.; S.D.O. 4,490 ft.

WEST TEXAS WILDCATS

Andrews County

Amerada Pet. Corp. No. 1 L. Littman sec. 6, Blk. A-29, P.S.L. Sur. T.D. 4,777 ft.; P.B. to 4,369 ft.; swbd. 98 per cent wtr.
American Liberty O. Co. No. 1 E. Cowden sec. 14, Blk. A-55, P.S.L. Sur. S.D. 5,002 ft.
W. G. Blanchard et al No. 1 Cox, C SW sec. 4, Blk. A-30, P.S.L. Sur. Drlg. 4,655
M. J. Delaney No. 1 E. P. Moore, sec. 12, Blk. A-20, P.S.L. Sur. T.D. 4,579 ft.; set csg.
Drlg. & Expl. Co. No. 1 Thornberg, sec. 8, Blk. A-42, P.S.L. Sur. Loc.
M. S. Forgeron et al No. 1 Lockhart & Brown, C NE¼ sec. 20, Blk. A-41, P.S.L. Sur. S.D. 179 ft.
Sinclair Prairie Oil Co. No. 2 Emma Cowden, sec. 11, Blk. 44, Twp. 2n. T.&P. Sur. T.D. 4,377 ft.; P.B. to 4,310 ft.; shot; C.O.
Hargrove et al No. 1 Riordan, NW¼, sec 10, Blk. A-44, P.S.L. Sur. Drlg. 4,960 ft.
Landreth Prod. Co. No. 1 L. Jones, Blk. A-42, P.S.L. Sur. Drlg. 4,467 ft.; testing.

Bailey County

Etz & Robinson No. 1 Enochs, Tract 66, League 182, Floyd Co. School Lands Sur. Drlg. 265 ft.

Brewster County

F. C. Dodson No. 1 Texas American Synd., sec. 66, Blk. 10, G.H.&S.A. Sur. Drlg. 5,900 ft.
Storey No. 1 Wilson, sec. 3, Blk. 212, T.& St. L. Sur. Drlg. 2,540 ft.

Cochran County

Ingleright & Fogelson No. 1 Houston T.P. 5,000 lbs.; I.P. 185 bbls. in 6 hrs.; acidized.
Pete Wiggins et al No. 1 C. Slaughter Dean, C Lab. 26, League 92, Lipscomb Co. Sch. Ld. T.D. 4,800 ft.; S.D. for tools.

Coke County

H. E. Ogden et al No. 1 Rawlins, sec. 390, Blk. 1-A, H.&T.C. Sur. S.D. 515 ft.

Crane County

Gulf Oil Corp. No. 2 McKnight, sec. 9, Blk. B-21. Drlg. 5,404 ft.; P.B. to 3,450 ft. R.U.R.

Crockett County

R. H. Henderson No. 1 C. B. Haun et al D.&B.; elev. 2,238 ft.; sulfur wtr. 1,303 ft.
Moore Bros. No. 1 P. Perner, sec. 37, Blk. 2,I.&G.N. Sur. R.U.R.
Superior Oil Co. of Calif. No. 1 J. S. Todd C SE¼ sec. 55, Blk. UV, G.C.&S.F. Sur. Top Ellen. 7,424 ft.; drlg. 7,790 ft.

Dawson County

R. Allbaugh No. 1 Higgenbotham, Labour 24, League 269, Moore Co. Sch. Lds. Loc.
R. Albaugh No. 1 D. Hogg, SE of SE sec. 17, Blk. 34, 4n, T.&P. Sur. Drlg. 226 ft.
E. L. Wilson No. 1 Scanlon, Sec. 83, Blk. M, E.L.R.R. Sur. T.D. 4,497 ft.; R.U. S.T.

Dickens County

C. E. Litchfield No. 1 Harris, sec. 354, Blk. 1, H.&G.N. Sur. S.D. 1,080 ft.

Edwards County

A. P. Carter No. 1 F. D. Sweeten, S&E sec. 48, Blk. 2, B&B Sur., 1½ mi. E of Rock Springs. S.D. 700 ft.

Ector County

Fuhrman Pet. Corp. No. 1 E. Cowden, sec. 41, Blk. 43, Twp. 2s, T.&P. Sur. T.D. 200 ft.; drlg. plug.
Shasta Oil Co. No. 1 K. Sands, sec. 32, Blk. 44, T.&P. Sur. Drlg. 4,033 ft.

Fisher County

Anderson & Kerr No. 1 Caldwell, sec. 169, Blk. 2, H.&T.C. Sur. Drlg. 2,500 ft.
Lewis Prod. Co. No. 1 Marrow, sec. 172, Blk. 2, H.&T.C. Sur. T.P. 3,549 ft.; T.D. 3,549 ft.; flwd. 288 bbls. first hour.

Gaines County

Amerada Pet. Corp. No. 1 Cox, NW cor. sec. 380, Blk. G, C.C.S.D.&R.G.N.G. Sur. Drlg. 4,012 ft.
Amerada Pet. Corp. No. 1 Matthews, sec. 417, Blk. G, C.C.S.D.&R.G.N.G. Sur. T.D. 5,018 ft.; to test; T.P. 4,920-50 ft.
Argo Royalty Co. No. 1 Jones, Drlg. 4,969 ft.
Carter et al No. 1-B Wasson, sec. 47, Blk. AX, P.S.L. Sur. T.D. 4,850 ft.; set csg.
A. G. Carter et al No. 1 Moore-Langdon, sec. 44, Blk. A, P.S.L. Sur. Comp.; elev. 3,547 ft.; I.P. 422 bbls. in 24 hrs.; acid.; T.D. 4,995 ft.
Continental O. Co. No. 1 Jones, sec. 22, Blk. A-7, P.S.L. Sur. Drlg. 5,156 ft.
Continental Oil Co. No. 1 Moore, sec. 46, Blk. AX, P.S.L. Sur. Swbg. 4,995 ft.

Glasscock County

Moore Bros. No. 1 King, sec. 46, Blk. 36, Twp. 1s, T.&P. Sur. Drlg. 3,887 ft.

Hockley County

Frank A. Bates No. 1 Lockett, C of NE of S sec. 5, Blk. 1, P.S.L. Sur. Drlg. 220 ft.
Stanolind O. & G. Co. No. 1 A. A. Slaughter, C SW¼ Labour 76, League 37, Zavalla Co. Sch. Lds. Sur. T.D. 4,770 ft.; R.U.S.T.

Howard County

Iron Mt. Oil Co. No. 1 D. H. Snyder, sec. 28, Blk. 30, Twp. 1s, T.&P. Sur. T.D. 2,900 ft.; shot; flowed 380 bbls. first 11 hrs.; fishing bit.
W. F. McDermott et al No. 1 Lucas, sec. 18, Blk. 29, Twp. 1n, T.&P. Sur., 5 mi. N of Dodge pool. T.D. 100 ft.; set csg.; shale; S.D.

Hudspeth County

Haymon Krupp Oil & Ld. Co. No. 1 Thaxton, SE¼ sec. 34, Blk. 74, Twp. 6. Drlg.; U.R. lugs.

Jeff Davis County

H. D. Wilcox et al No. 1 Jones-Coffield. U.R. csg. 2,745 ft.

Loving County

Barnett Pet. Co. No. 1-A Johnson, sec. 2, Blk. 57, Twp. 1, T.&P. Sur. Drlg. 1,037 ft.
Barnett Pet. Corp. No. 1-B W. D. Johnson, sec. 12, Blk. 56, Twp. 1, T.&P. Sur. Ready to spud.
Continental Oil Co. No. 1 E. C. Marrs, sec. 20, Blk. 54, Twp. 2, T.&P. Sur. Drk.
Woodley Pet. Co. No. 1 Klon, sec. 21, Blk. 55, Twp 1, T.&P. Sur. Fsg. drill pipe 3,461 ft.

Mitchell County

Harris & Anderson No. 1 A. F. King, sec. 11, Blk. 28, Twp. 1s, T.&P. Sur. Drlg. 2,530 ft.
Mitchell O. & G. Co. No. 1 Z. Morrison, sec. 36, Blk. 29, Twp. 1n, T.&P. Sur. T.D. 3,157 ft.; shot.

Nolan County

M. S. Ingleright & L. E. Hults No. 1 Blank, Blk. 1-A, H.&T.C. Sur., near Decker, 4,000-ft. test. Loc.

Pecos County

Cannon & Cannon No. 1 University, sec. 2, Blk. 20, No report.
K. Kimberlin No. 1 Humble-Young, sec. 49, Blk. 10, H.&G.N. Sur. Drlg. 1,570 ft.
Phillips Pet. Co. No. 1 Grierson, sec. 71, Blk. QW, T.C.R.R. Sur., 10 mi. NW of Fort Stockton. Drlg. 1,250 ft.
G. J. Smith No. 1 W. E. Smith, sec. 37, Blk. 1, I.&G.N. Sur. Drlg. 2,670 ft.
Tex-Mex Pet. Co. No. 1 Williams, sec. 79½, Blk. 8, H.&G.N. Sur. No report.
S. Thompson No. 1 Elsinore Cattle Co., sec. 54, Blk. D, G.C.&S.F. Sur. Drlg. 5,804 ft
Trans-Pecos Oil Co. No. 1 Popham. T.D. 535 ft.; S.D.
W. K. Tully No. 2 Perry. Drlg. 1,786 ft.

Presidio County

L. C. Brite No. 4 fee, C NW¼ sec. 113, Blk. 12, G.H.&S.A. Sur. Drlg. 4,302 ft.
Sadler Bros. et al No. 1 Bagley. S.D. 3,315 ft.

Reagan County

K. E. Sherman No. 1 W. E. Friend, SW cor. sec. 3, Wm. Allen Sur. Drlg. 2,018 ft.
Moore Bros. No. 1 University, sec. 8, Blk. 7. Drlg. 787 ft.

Reeves County

Barnett Pet. Corp. No. 1 Ely, sec. 38, Blk. 71, P.S.L. Sur., 12 mi. NW of Toyah. Drlg. 1,290 ft.
General Crude Oil Co. No. 1 T. P. Land Trust, C NE¼ sec. 15, Blk. 56, Twp.

2, T.&P. Sur. T.D. 3,294 ft.; shot; cleaned self and bridged; now C.O.

Runnels County

Hall Oil Co. No. 1 Beddo, sec. 51, Thompson Casey Sur. R.U.R.

K Z Oil Co No. 1 B Fletcher, E. C. Good Sur. Drlg. 1,960 ft.

Price & Kramer No. 1 Giesecke, Blk. 227, Hughes Sur. S.D. 2,503 ft. for repairs.

Stevens & Glover No. 1 Fowler, sec. 16 E.T.R.R. Sur., 2 mi. NE of Ballinger S.D. 480 ft.

Schleicher County

J. M. Cooper No. 2 B. Page, sec. 40, Blk. L G.H.&S.A. Sur. Drlg. 3,800 ft.

Tex.Tor Oil Corp. No. 1 Judkins & Spencer C of SW¼ sec. 33, Blk. A, A.&B. Sur. Drlg. 1,845 ft.

Scurry County

C. W. Guthrie et al No. 1 F. W. Hardee, sec. 99, Blk. 97, H.&T.C. Sur. S.D.

Terry County

Anthony & Rice No. 1 Brownfield, C NW¼ sec. 28, Blk. A-1, E.L.R.R. Sur. T.D. 4,536 ft.; R.U.S.T.

R L Foree No. 1 A. E. Pool, sec. 54, Blk D-11, D.&S.E. Sur. S.D. 4,847 ft.; waiting on tools.

Upton County

Maverick Oil Co. No. 1- Holmsley, sec. 16, Blk. B, C.C.S.D.&R.G.N.G. Sur., 14 mi. NE of Rankin. T.D. 2,488 ft.; set csg.

Ward County

F. H. Murphy et al No. 1 Monroe, sec. 210 Blk. 34, H.&T.C. Sur. T.D. 4,295 ft.; Mahres No. 1 Wilson, sec. 133, Blk. 34 H.&T.C. Sur. T.D. 5,094 ft.; P.B. to 5,092 ft.; shot 100 qts; 5,052-92 ft.; C.O.; est. good for 75 B.P.D.

L. F. White et al No. 1 Rector-Monroe cor. sec. 3, Blk. 1, W.&N.W. Sur. Top Del L. 4,635 ft.; top Del. sd. 4,670; shot 80 qts. 4,680-4,705 ft.; C.O.; T.D. 4,710 ft.

Winkler County

Champlin No. 2 Cowden, sec. 2, Blk. 12 P.S.L. Sur. T.D. 2,925 ft.; shot; 150 B.O.

Yoakum County

Bohago & Bond No. 1 West, sec. 606, Blk. D, T.D. 5,182 ft.; to test.

Denver Dev. Co. No. 1 Whittenburg, sec. 831, Blk. D, J. H. Gibson Sur. Drlg. 4,609 ft.

Moore Bros. No. 1 Cleveland, sec. 706, Blk. D, J. H. Gibson Sur. Drlg. 4,060 ft.

Texas Co. No. 1 Walker. Drlg. 4,729 ft.

RANGER (CENTRAL TEXAS) DISTRICT

Brown County

C. R. Cox, Tr. No. 1 Jan Lee, 1,220 ft. from N and 600 ft. from E of SW¼ sec. 11, B.B.B.&C. Sur., NE cor. county. Loc.

W. T. Daniels et al No. 1 Joyner, 1 mi. S Brownwood, T. Smith Sur. No. 600, Abst. 821. Spdg.

Garland Moore et al No. 1 T. S. Williams, 1 mi. NE Grosvenor. Sec. 40, H.T.&B. Sur., Abst. 2037. Spdg. & S.D.

Callahan County

Hal Hughes No. 1 Poindexter, 330 ft. fr. N&E of sec. 350, Geo. Hancock. Sur. 2 mi. NE of Oplin. M.I.R.

J. C. Jackson et al No. 1 Thompson, 2 mi S Eula, sec. 30, B.B.B.&C. Sur. S.D. 1,350 ft.

Hugh King, Jr. et al No. 1 K. B. Legett, 7 mi. W Clyde, sec. 7, Blk. 8, S.P.R.R. Sur. T.D. 1,350 ft.; rng. 8¼-in. csg.

R. F. St. John No. 1 J. A. Hinshaw, Subd. 9, sec. 29, S.P.R.R. Sur., Blk. 8. Drlg. 1,475 ft.

Ungren & Frazier No. 1 Ross Est., 1 mi. NW of Baird, 220 ft. from S and W of N½ NE¼ sec. 103, B.B.B.&C. Sur. Spdg.

Coleman County

Dixie O.&G. Co. No. 1 Reaves, 6 mi. NW Bangs, J. M. Rhine Sur. No. 629. S.D. 805 reprs.

Comanche County

N. D. Gallagher et al No. 1 Mrs. B. I Terry, Desdemona pool, N. H. Kuyken dall Sur. Drlg. 4,100 ft.

Eastland County

G. D. Chastain et al No. 1 Weddington, 4 mi. N Cisco, 330 ft. from N and W of sec. 496, S.P.R.R. Sur. M.I.M.

Monark O. & G. Co. No. 1 Downtain, sec 14 H.&T.C. Sur. Blk. 4, 3 mi. N Eastland. S.D. 1,250 ft.

Erath County

Jess Hickey et al No. 1 W. M. Martin, 2 mi. SE Desdemona, D. J. Otho Millard Sur. A-533. Drlg. 2,500 ft.

Haskell County

E. W. Marland & H. B. Drake No. 1 Corothers, 6 mi. S Haskell, sec. 67, D. E. Zaaz Sur. Fsg. 2,085 ft.; U.R.

Jack County

Bennett Pet. Corp. No. 1 J. S. Rhodes, 2½ mi. NE Bryson, 250 ft. from S and 330 ft. from W of W. Higgins Sur., Abst. 2,199. Loc.

J. P. Burrus No. 1 W. J. Eatherly, J. Helmstutler Sur. T.D. 1,200 ft.; drlg. by tools.

G. M. Gillespie No. 1 O. Loving, sec. 3345, T.E.&L. Sur., 2 mi. SE Jermyn. O.S 3,169-74 ft.; T.D. 3,211 ft.; rng. 5-in.

W. H. Hammon, 1 mi. N Rhodes pool. Setting surf. pipe.

Hanlon-Buchanan, Inc., No. 1 Lindsey, 7 miles NW of Jacksboro, 990 ft. from E line and 330 ft. from S line, I. N. Wright Sur., Abst. 898. Drlg. 750 ft.

H. B. Madden No. 1 J. L. Mask, sec. 2708, T.E.&L. Sur. S.D. 1,831 ft.

Nelson Oil Synd. No. 1 Henderson, 2 mi. SW Bryson, 330 ft. from N line and 990 ft. from E line of farm in A. S. Ensworth Sur., Abst. 1,789. Loc.

Panhandle Ref. Co. No. 1 D. R. Sewell, 4 mi. E of Bryson, 3,641 ft. from S line and 990 ft. from W line, Mary Hamilton Sur., Abst. 262. Drlg. 2,550 ft.

T. C. Patton No. 1 J. R. Williams, B.S.&F. Sur., 5 mi. SE of Rhodes pool. S.D. 4,780 ft.

R. A. Westbrook No. 1 W. Knox, sec. 83, B.B.B.&C. Sur. Drlg. 2,450 ft.

Joe Worsham et al No. 1 Cash, 3½ mi. NE of Bryson, 990 ft. from E and 330 ft. from S lines of farm in I. White Sur., Abst. 895. Drlg. 1,650 ft.

Jones County

Bond Oil Corp. & Harrison No. 1 Little, 3½ mi. NE Avoca, 330 ft. from N and W of SW¼ sec. 172, B.B.B.&C. Sur. Drlg. 980 ft.

E. P. Campbell No. 1 Minter, 4 mi. N Hawley, 220 ft. from N and 150 ft. from E of S½ SE¼ sec. 26, T.&P. Sur., Blk. 15. R.U.

Fain & McGaha Oil Corp. No. 1 Akens, 3 mi. SW Hawley, 220 ft. from N and E of sec. 18, T.&P. Sur., Blk. 16. Drlg. 1,500 ft.

Fain & McGaha Oil Corp. No. 1 Minter, 3 mi. NW Hawley, Lot 12, Robt. Smith Sur. No. 192. Drlg. 800 ft.

Fain & McGaha Oil Corp. No. 1 J. H. Wheeler, 3 mi. NW Sandy Ridge pool sec. 55, O.A.L. Sur. T.D. 1,900 ft.; S.D. repairs.

C. J. Kleiner No. 1 Guitar, 3 mi. S Sayles pool, sec. 50, Blk. 16, T.&P. Sur. U.R. 6-in. 1,950 ft.

M. A. Mead No. 1 H. Osment. Drlg. 500 ft.

W. H. Peckham No. 1 Davis et al, 3 mi. SW Lueders. Subd. 8, F. M. Smith Sur. No. 3. Drlg. 1,940 ft.

A. G. Swanson No. 1 Manley, 7 mi. S Nugent, 660 ft. from S and E of SW¼ sec. 46, T.&P. Sur., Blk. 14. Drlg. 810 ft.

Riddle et al No. 1 J. D. Freeman, 8 mi. SW Anson, sec. 6, T.&P. Sur., Blk. 17. T.D. 2,245 ft.; fsg.

Southern Oil Co. No. 1 B. W. Thane NE cor. County, Andrew Jones Sur. 114. S.D. 1,200 ft.

H. A. Swann Jr. No. 1 Keith & Swann, Blk. 68, Hawley Twest Sur. Loc.

Ungren & Frazier et al No. 1 S. W. Harvey, 3 mi. SE Nugent, sec. 20, Blk. 14, T.&P. Sur. T.D. 1,493 ft.; U.R. 8¼-in.

Ungren & Frazier No. 1 Melton, 4½ mi. SW Hawley, 1,100 ft. from N and E of farm in John Winters Sur. Drlg. 1,750 ft.

Palo Pinto County

Paul Garrett No. 1 Mabry heirs, NE cor. county, sec. 2,572, T.E.&L. Sur. S.D. 470 ft.

Henry Hobbs et al No. 1 Bessie Holt, 4 mi. S. Graford, sec. 1,783, T.E.&L. Sur. S.D. 200 ft.

Lone Star Gas Co. No. 1 Hart Oil Corp., CWL county, 2,665 ft. from E and 2,667 ft. from S of sec. 19n, T.&P. Sur., Blk. 3. 4,000-foot test; spdg.

Earnest Lloyd et al No. 1 Bailey, 3 mi. NE Graford, sec. 2,003, T.E.&L. Sur. S.D. 1,802 ft.

Shackelford County

Humble O. & R. Co. No. 4 Geo. DeLafosse, E C line county, sec. 1550, T.E.&L. Sur. Drlg. 4,400 ft.

M. P. Moore et al No. 1 Geo. Gray, W side Bluff Creek pool, sec. 208, E.T.R.R. Sur. L. 1,813-16 ft.; U.R. 6⅝-in.

Stephens County

Barnett Pet. Corp. No. 1 J. Q. Corbett, 4 mi. SE Ivan, sec. 3, S.P.R.R. Sur., Blk. 3. Drlg. 2,980 ft.

Clark & Cowden et al No. 2 Echols Heirs Blk. 3, Fsg. bailer 4,005 ft.

Cox & Caprito No. 1 Donnell, 1 mi. SW Eliasville, sec. 1,208, T.E.&L. Sur. Drlg. 2,800 ft.

Dean Bros. & Fortex Oil Corp. No. 1 Watson, 5 mi. SW Caddo, sec. 28, T.&P. Sur., Blk. 6. Drlg. 815 ft.

W. B. Hamilton No. 1 B. O. Grant, CWL of county, 1,452 ft. from N and 2,384 ft. from W of sec. 63, B.A.L. Sur. 2,500-ft. test; Spd. and S.D.

O. J. Perren No. 1 J. K. P. Hughes, NE cor. County of NW¼ sec. 6 A.B.&M. Sur., Abst. 2,683. S.D. 3,360 ft.

Philtop O. & G. Co. No. 1 T. M. Corbett, 8 mi. NE Caddo, Edward Romershausen Sur., Abst. 149. Sd. 3,952-57 ft.; T.D. 4,008 ft. treated with 3,000 gals. acid; tstg.

W. J. Rhodes No. 1 Black Bros., 8 mi. NE Breckenridge, sec. 1,135, T.E.&L. Sur. Drlg. 2,250 ft.

Stonewall County

General Crude Oil Co. No. 1 W. J. Bryan, 7 mi. N Hamlin, Subd. 10, Wm. Vardeman Sur. No. 347. Cored sd. 4,347-52 ft.; show O. and G.

Tarrant County

E. E. Hoffpauir et al No. 2 W. H. Davis, 2 mi. S Arlington, H. Blackwell Sur. S.D.O. 2,140 ft.

Taylor County

Louis Davis No. 1 E. Lincicum, NE cor. county, 350 ft. from N and 500 ft. from E of NW¼ sec. 21, B.A.L. Sur. T.D. 1,385 ft.; C.O.

Throckmorton County

Carl B. Bailey No. 1 Mrs. Minnie Smith, NE cor. county, 1,854 ft. from N line and 450 ft. from W line, sec. 2,440, T. E.&L. Sur. Drlg. 1,350 ft.

G. C. Foster No. 2 Brown, 5 mi. NW Woodson, 2,477 ft. from E, 536 ft. from S of sec. 920, T.E.&L. Sur. Drlg. 1,200 ft.

Long & Bedner No. 1 Everett, 9 mi. S Throckmorton, sec. 1,615, T.E.&L. Sur. Treated 6,000 gals.; W.O.A.

Wise County

Latex Oil Co. No. 1 Smith, 3 mi. E of Bridgeport, Jas. Couch Sur. T.D. 3,850 ft.; prep. to core.

E. C. TEXAS WILDCATS

Anderson County

C. & G. Oil Co. No. 1 F. A. Newson, T. C. Lively Sur., 3 mi. NW of Percilla. T.P.G. 4,636-4,870 ft.; drlg. 4,909 ft. in broken chat.

Humble O. & R. Co. No. 1 Mrs. S. Hassell, J. Beard Sur., 2 mi. N of Jarvis T.D. 1,376 ft.; recemented surf.; W.O.C.

Bowie County

Chew & Bassett No. 1 Barkman. S.D. 2,851 ft.

Ferguson & Hill No. 1 Breckenridge. Drlg. gumbo 2,900 ft.

Woodley & Bentley No. 1 Lumpkin. S.D. 4,843 ft.

Cherokee County

Merica Oil Co. (W. L. Stone) No. 1 Cherokee Dev. Co., 330 ft. E and 500 ft. S. A. J. Acker Sur., 2 mi. E of Maydelle. M.I.M.

Falls County

E. B. Collard et al No. 1 P. Neikamp, W. Hampton Sur., 3 mi. E of Lott. S.D. 280 ft.

M. Hays et al No. 1 Mrs. J. J. Hodges N. K. Robinson Sur., 5 mi. SW of Lott. Drlg. sh. and L. 1,150 ft.

Fannin County

Glazier & Trippe No. 1 N. Young, Hy Hitchcock Sur., 1½ mi. SW of Randolph in SW cor. of county. S.D. 312 ft.

Freestone County

Holt et al No. 1 W. H. Chambers, W. D. Allison Sur., 2¾ mi. N of Keechi 5,200-ft. test. Drlg. 3,100 ft.; 13⅝-in. 780 ft.

C. E. Rossiter No. 1 J. P. Fulton in J. P. Fulton Sur., 2½ mi. E of Donie. S.D. 956 ft.

Stroude et al No. 1 P. Mullens. R. D. Sloan Sur., 6 mi. NE of Fairfield. T.D. 540 feet, running 5-in. csg.

Gregg County

Humble O. & R. Co. & Gulf O. Corp. No. 1 E. Robertson, 550 ft. N and 37 ft. E, SE cor. of the Alex Ferguson Sur., but in M. Mann Sur., 2½ mi. SW of Longview Trinity test. Loc.

Henderson County

American Liberty Oil Co. et al No. 1 LaRue & Johnson, Blk. 11, P. Jackson Sur., 2 mi. W of LaRue. M.I.R.

Wm. McDougall No. 1 Trinity, F. & S. Land Co., Blk. 1, H.&T.C. Sur. Drlg.

Tide Water Assoc. et al No. 2-C McElreath & Suggett, W. P. Wyche Sur., Georgetown 5,070 ft.; top Paluxy 6,087 ft.; top Glen Rose 6,282 ft.; 7,937-45 ft. porous L.; T.D. 8,020 ft.

Leon County

Kelly & Fox No. 1 Bryant, A. M. Coultern Sur., 1 mi. E Marquez, approx. 300 ft. N. S.L. and 1,000 ft. E of R.R. R.U. shallow test.

Limestone County

J. Johnson No. 1 E. M. Speight, A. Valera Sur., 8 mi. SE of Mexia. Loc. abdn.

Pure Oil Co. No. 16-T Kendrick, P. Varella Sur., Mexia field. Drlg. 6,039 ft.

Stanolind O. & G. Co. No. 1 T. Norris, in Thresher Sur., 5 mi. N of Kosse; 6,500-ft. test. Loc.

Morris County

J. O. Whittington No. 1 Joiner Leasing Co., T.C.R.R. Sur. No. 734, 8 m. NW Naples, 700 ft. E of Estly W line and 2,600 ft. F.N.L. Sur. M.I.M.

Nacogdoches County

G. C. Collier and Corley No. 1-A A. T Mast, 14 mi. SW of Nacogdoches, T. S Lambert Sur., 750 ft. N of No. 1. R.U.

Navarro County

T. Sharpe et al No. 1 E. B. McDowell, T. Jordan Sur., ½ mi. S of Bassets. S.D. 2,300 ft.

Red River County

Roy I. Carter Drlg. Co. No. 1 J. A. Tutt C 40-ac. tr. in D. Hart Sur., 2 mi. S of Avery. S.D. 410 ft.

Texas Trading Co. No. 1 Southern Pine Lbr. Co., D. Burton Sur., 12 mi. N of Clarksville. T.D. 1,950 ft. hard limes; S.D. for repairs.

Rusk County

J. Merrick et al No. 1 Tipps, T. Uzzell Sur., 6 mi. S of East Texas field. Top sd. 3,886 ft.; pulling tubg.; T.D. 3,890 ft.

Nivia Oil Co. No. 1 Citizens Natl. Bank M. D. Carmel Sur. 2½ mi. SE of Henderson. Drlg. 6,010 ft. sh., L. and anhyd.

J. W. Shipman et al No. 1 Citizens Bank, J. J. Y'Barbo Sur., 4 mi. NE of Henderson. S.D. 4,340 ft.

Upshur County

F. W. Maddox No. 1 S. T. Buie, J. M. Dunn Sur., 4 mi. E of Gilmer. Austin 3,629 ft.; top Woodbine 3,717 ft.; perf. csg. 3,748-42 ft. with 8 shots; test S.W. and show oil; S.D.

EAST TEXAS

(Border Counties)

Cass County

Bay Oil Corp. No. 2 Geo. Parker, G. Crowder Sur. Drlg. 1,352 ft.

Magnolia Pet. Co. No. 18 I. Haywood, I Evans Sur. Comp.; flw. 21 B.P.D.; T.D. 6,031 ft.

R. W. Norton No. 4 Davis, H. Holbert Sur. 7-in. 5,960 ft.; W.O.C.S.

R. W. Norton No. 1 Hussey, P. Evans Sur. Drlg. 5,899 ft.

R. W. Norton No. 8 Davis, H. Holbert Sur. Tstg.

R. W. Norton No. 2 W. and E. Starke, D Gilliam Sur. Comp.; flw. 206 B.P.D.; T.D. 6,009 ft.

Ohio Oil Co. No. 20 E. P. Willis, S.F.I.W. Sur. Drlg. 4,935 ft.

W. G. Ray Drlg. Co. No. 2-B Geo. Parker, G. Crowder Sur. Drlg. 4,152 ft.

United Prod. Co. No. 4 Allday, P. Evans Sur. 7-in. cmtd. 5,958 ft.; T.D. 6,016 ft.; W.O.C.S.

United Prod. Co. No. 4 V. Bivens, J. Collom Sur. Drlg. 4,744 ft.

United Prod. Co. No. 1 Baugus Unit, Cass Co. Sch. Ld. Sur. Drlg. 5,990 ft.

United Prod. Co. No. 2 Baugus Unit, Cass Co. Sch. Ld. Sur. 7-in. cmtd.; T.D. 6,012 ft.; W.O.C.S.

United Prod. Co. No. 1 fee, H. Holbert Sur. 7-in. 5,987 ft.; T.D. 6,070 ft.; tstg.

United Prod. Co. No. 1-A Starke, D. Gilliam Sur. Drlg. 5,216 ft.

United Prod. Co. No. 2-A Starke, D. Gilliam Sur. Drlg. 2,225 ft.

Marion County—Rodessa

Arkansas-La. Gas Co. No. 1 Emma Ford, A. D. S. Coy Sur. Drlg. 5,541 ft.

Arkansas-La. Gas Co. No. 1 J. P. Fant, L. P. Cadenhead Sur. T.D. 6,178 ft.; tstg.

Fohs Oil Co. No. 2 M. Reynolds, A. D. S. Coy Sur. Drlg. 998 ft.

Gulf Prod. Co. No. 1 L. Henderson, R. Bennington Sur. Drlg. 3,366 ft.

Holcomb & Thomason No. 1 L. Henderson, C Lots 4 and 6, R. Bennington Sur. Drlg. 3,134 ft.

Mid-Continent Pet. Corp. No. 2 Sory, A. D. S. Coy Sur. Drlg. 2,210 ft.

Mid-Continent Pet. Corp. No. 3 Sorry, A. D. S. Coy Sur. Drlg. 4,745 ft.

Hunter Co. No. 3 Fonda, A. D. S. Coy Sur. Drlg. 4,198 ft.

United Prod. Co. No. 1 Hutchinson, A. D. S. Coy Sur. Comp.; flw. 552 B.P.D.; T.D. 6,090 ft.

Panola County

Danciger O. & G. Co. No. 1 Tatum, A. Bissell Sur. Drlg. 4,010 ft.

Magnolia Pet. Co. No. 2 E. A. Hull, Thos Applewhite Sur. Drlg. 7,522 ft.

Shelby County

C. A. Parker, Jr., No. 1 W. D. George, Clement Tutt Sur. 16-in. cmtd. 300 ft.

Portex Oil Co. No. 3 W. R. Pickering, A Hanson Sur. T.D. 5,089 ft.; tstg.

Slier and Riley No. 1 Rushing, M. Smith Sur. S.D. 3,020 ft.; cor. depth.

Drilling Contractors

(Continued from Page 101)

Buchanan rig is being employed in the Hoffman field of Duval County by the Duval Oil Corp.

Prospects for a substantial volume of additional new work for contractors are seen with the extension the past week of production 1,000 feet farther northwestward at Hastings. Just how much farther the field will go cannot be told, but an appreciable amount of new territory is opened for drilling. Hastings has buttered lots of bread for contractors, and contractors no doubt will get their share of the extension development now getting under way. The leasing has started a new active leasing play extending several miles farther northward as far as Pearland. Nine wells, most of them by contractors, were completed at Hastings during the week, and another half dozen are in process of completion. At the speed this field is being drilled, contractors are kept busy setting up and tearing down and moving.

PERSONAL

F. H. KAY, director of the Creole Petroleum Corporation, is absent from his New York office on annual vacation leave.

W. L. McCLANAHAN, of Mount Pleasant, Mich., independent operator and discoverer of the Arkansas extension of the Rodessa field, has established offices in Shreveport, La.

SIDNEY S. SMITH, who is in charge of utilization of lighter hydrocarbons in refineries and fields for the Shell Petroleum Corporation in the Mid-Continent, Middle West and Gulf Coast territories, returned to his headquarters in St. Louis, Mo., this week following a motor trip on which he was accompanied by MRS. SMITH and their two daughters. Their principal stops for recreation were in California and Colorado.

C. R. McKNIGHT, geologist with the Arkansas Fuel Oil Company and secretary of the Shreveport, La., Geological Society, has returned from a vacation trip to Pittsburgh, Pa., and points in New York.

J. P. SUTTON, manager of the Ohio Oil Company's department of industrial relations, Findlay, Ohio, acted as master of ceremonies at a reception and entertainment for company employes and their wives from the Casper, Wyo., offices and the Big Muddy field, held at the Casper Country Club. PROF. W. D. HUMPHREY, of the Findlay high school faculty, who recently compiled a history of the Ohio Oil Company, which has been published, gave a talk on interesting incidents in the life of the organization. Dancing and refreshments closed the evening.

A. L. SHANER, of Bolivar, N. Y., a leading Allegany field producer, has purchased the 171-acre property of the Diamond Oil & Gas Company. There are 19 wells on the properties.

G. R. BROINARD, JR., formerly district petroleum engineer for the Shell Petroleum Company in the East Texas field, has been transferred to the main office of that company in Houston, Tex.

FRANK E. HOLSTEN, Tulsa, vice president in charge of manufacturing of the Barnsdall Refining Corporation, with MRS. HOLSTEN and their two daughters, returned Saturday from a motor trip which took them to Corpus Christi and Galveston, Tex. Two things observed on the tour left pronounced impressions on Mr. Holsten's mind. One was the magnificent system of highways which Texas has developed in late years. The other was the long distances between filling stations. For more than 40 miles along one stretch of splendid highway between San Antonio and Brownsville there was not one opportunity to fill the tank. Intervals of 25 miles were frequent.

M. C. HARRELL, superintendent for the Texas Company in Kansas, is spending his vacation in the Ozarks.

DR. DONALD C. BARTON, geophysicist for the Humble Oil & Refining Company, is in Mexico City, passing a vacation with his family.

W. N. FINNEGAN, JR., chief statistician for the Humble Oil & Refining Company in Houston, Tex., spent a vacation of several weeks in Mexico, driving to Mexico City.

B. H. FAULKNER, of Montclair, N. J., secretary-treasurer of the Amiranian Oil Company, Seaboard Oil Company and Inland Exploration Company, has returned from a vacation in Europe with his sons.

HOWARD F. FAERBER, district sales manager of the Texas Company, who joined the company in Tulsa in 1912, was presented with a silver service and a camera by Los Angeles employes upon his completion of 25 years of uninterrupted service.

WILLIAM L. GOMORY, chemical engineer and petroleum technologist, whose headquarters have been in Paris for several years, is now established at 370 Lexington Avenue, New York. While overseas he acted as technical and patent adviser in European patent matters for the Standard Oil Development Company.

K. R. KINGSBURY, president of the Standard Oil Company of California, recently entertained T. RIEBER, chairman of the board of directors of the Texas Company, and C. E. OLMSTED, president of the Texas Company (California) at the annual high jinks of the San Francisco Bohemian Club in Bohemian Grove, where each year executives spend two weeks of seclusion. Radios and newspapers are taboo.

Do You Remember?

From The Oil and Gas Journal Files

25 YEARS AGO

E. W. Marland, of Pittsburgh, Pa., but now calling Ponca City, Okla., his home, was in Tulsa for a short visit. He is manager of the 101 Ranch Oil Company.

Operators from older fields in Illinois were flocking to Allendale, Wabash County, attracted by a 575-barrel well.

The question of maintaining supply in face of the increasing consumption of gasoline was described as the most vital issue of the day before the industry. An advance of a cent in gasoline, the seventh since the first of the year, was announced.

20 YEARS AGO

Pennsylvania crude was advanced to $3.50 a barrel.

Contractor N. C. Essary descended 510 feet into an 18-inch drilled well at Bliss, Okla., to aid in fishing for a bit. He put the bit to the side of the hole and another bit was to drill by it. On his second descent he was caught by a small caving but escaped with minor lacerations.

Four men were killed on the Peterson lease near Warren, Pa., when a worker kicked a nitroglycerin can that had been emptied of all but a few drops.

10 YEARS AGO

The Federal Oil Conservation Board was considering recommendations affecting the oil industry and in congress Senator Trammell was demanding an investigation of the oil and gasoline business.

Crude oil stocks in West Texas increased over 1,000,000 barrels during July to 4,792,554 barrels, most of the gain coming from Crane County with some from Upton County.

Crude prices in West Texas and the Texas Panhandle had been reduced. Production was increasing too rapidly and there was doubt of pipe lines meeting the situation.

PAUL G. BENEDUM, manager of the Benedum-Trees Oil Company, in Houston, Tex., left for Colorado, where he will spend his summer vacation.

C. D. WATSON, director and exploration engineer of the Carter Oil Company, Tulsa, accompanied by MRS. WATSON, is taking his vacation in Mexico City.

J. E. BAILEY, district engineer for Tide Water Oil Company, Kilgore, Tex., and formerly chief engineer for Texas State Railroad Commission, is the father of a new baby girl.

O. W. WALCHLI, general manager of the Sinclair Refining Company refinery in Wellsville, N. Y., has announced his retirement. He will be succeeded by W. D. CHENAUT, present plant superintendent.

FRANK WILLIBRAND, former superintendent in Oklahoma City for the Phillips Petroleum Company, has been transferred to Ada, Okla., and put in charge of the company's eastern Oklahoma wildcat wells. FRANK FLOOD now is handling the Oklahoma City area for Phillips.

NEAL H. ANDERSON, president of the Anderson Oil Company of California and former California oil umpire, has been chosen president of the Sierra Trading Corporation. CLAYTON SEVERNS, president of the Severns Oil Company, has been elected to the board of directors.

ALBERT O. PEGG, of the Union Oil Company of California and vice chairman of the Pacific Coast section of the National Safety Council, presented JAMES M. McSWEENEY with the council's medal for rescuing GEORGE BUCKINGHAM, of Long Beach, Calif., who fell from a passenger ramp in Los Angeles harbor.

PARAGRAPHS

F. M. O'CONNOR, New York, has been elected vice president in charge of sales for the Allied Oil Corporation. Mr. O'Connor formerly was in the sales department of the Warner Quinlan Company.

JAMES L. COOK, assistant secretary-treasurer of the Ohio Oil Company, Tulsa, and IVAN R. COLLIER, civil engineer for the same organization, are back from vacations spent in Oregon, Washington and British Columbia. Each was accompanied by his wife. The vacations were not joint ones. The Colliers, who started first, did not know about the plans of the Cooks, which were somewhat hurriedly formed later. While in Portland, Ore., Mr. and Mrs. Cook went on a sightseeing trip along the Columbia River. They were standing at the edge of the famous Bonneville dam when they observed another couple getting from a car. It was Mr. and Mrs. Collier, who had stopped to view the same sight. Exclamations of surprise over the unexpected meeting. A few minutes of chat and of marvel over the engineering achievement. Then goodbyes till they should meet back home the next week.

W. E. SOLES, superintendent for the Sun-Yount-Lee Pipe Line Company in the East Texas field, is on vacation in West Virginia.

COL. GEORGE A. BURRELL, director and operating manager of the Atlantic States Gas Company, Inc., New York, has been elected vice president of the company. Colonel Burrell, an alumnus of Ohio State University, was awarded the Lamme engineering medal by that institution in 1935. He discovered the helium reserves at Petrolia, Tex., during the World War and directed the government's helium program. Later he was placed in charge of chemical research for the Chemical Warfare Service. He was awarded the distinguished service medal by the government and in 1919 received the degree doctor of science from Wesleyan University, Middletown, Conn.

JOHN HURLEY HEALEY, president of the Healey Drilling & Producing Company, Fort Worth, Tex., and MISS BETTY MUGGLETON, of Wisconsin Rapids, Wis., were married August 12 in Fort Worth. Mr. Healey is a son of W. J. HEALEY, a Bradford, Pa., oil producer. He and his bride are spending their honeymoon in Colorado.

JOSEPH A. LaFORTUNE, vice president of the Warren Petroleum Company; his brother, FRED J. LaFORTUNE, assistant traffic manager of the same company, and their nephew, JACK LaFORTUNE, clerk in the Natural Gasoline Corporation, all of Tulsa, were in South Bend, Ind., the past week, attending a family reunion. The first-named was back at his desk Monday, but Fred and Jack are putting in another week in South Bend.

LUTHER SMITH, geologist with the Arkansas Fuel Oil Company, Shreveport, La., is having his vacation in California.

JOSEPH A. HARTLEY, president of the Braun Corporation and a member of the California University Club and Wilshire Country Club, was installed recently as president of the Los Angeles Rotary Club.

JAMES R. SLOANE, formerly vice president of the James B. Berry Sons' Company, Inc., has become vice president of the Oil Trading Company, Inc., of New York. Mr. Sloane assumed his new position August 16.

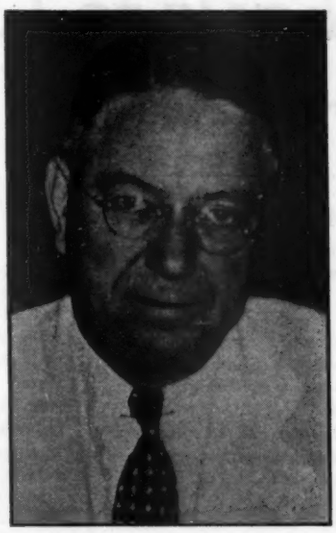
CLYDE V. TEMPLE, division engineer for the Humble Oil & Refining Company in the eastern Texas division, with headquarters in Tyler, has resigned to devote his attention to personal business. His resignation is effective September 1.

W. P. Z. GERMAN, chief counsel for the Skelly Oil Company, Tulsa, accompanied by his son BILL, has left for Evergreen, Colo., where he will meet MRS. GERMAN, who has been there since early July. All will return home September 1.

E. B. SWANSON, assistant director of the petroleum conservation division, department of the interior, Washington, D. C., has been visiting East Texas and Gulf Coast oil fields the past week in the course of a tour planned to comprehend important oil centers of the Southwest. He conferred with officials of the federal tender board in Kilgore. Mr. Swanson said he would visit Houston, Corpus Christi, Austin, Oklahoma City, Tulsa and Wichita, Kans. The purpose of the tour, he said, is to "get in close touch with what is going on within the oil industry."

He Heads the Thirteen

Thomas H. Taylor, who heads 13 American oil companies which will present an exhibit at the New York World's Fair in 1939, entered the petroleum industry as a lubricating trade record clerk for the Standard Oil Company of Kentucky in New Orleans, La., in 1901. Now he is assistant to the president of the Standard Oil Company of New Jersey. After two years in the New Orleans job young Taylor was advanced to assistant manager of the lubrication department in Cincinnati, Ohio. In 1906 he was sent to Chicago as assistant manager of the eastern lubrication department of the Standard Oil Company (Indiana).



THOMAS H. TAYLOR

In 1910 Mr. Taylor returned to New Orleans as sales assistant to the vice president of the Standard Oil Company of Louisiana. Successively he held the positions of sales manager, general sales manager, director, and director coordinating sales. In 1934 he became manager of the New England division of the Colonial Beacon Oil Company, refining and marketing affiliate of the Standard Oil Company (New Jersey). Recently he was transferred to New York as assistant to the parent company's head. At the time of the flood disaster in the Ohio and Mississippi valleys last spring Mr. Taylor was loaned to the Red Cross, and from Washington, D. C., he coordinated the distribution of oil products to prevent shortages. The 13 companies joining in the World's Fair exhibit have organized as the Petroleum Industry Exhibition, Inc., with Mr. Taylor as president.

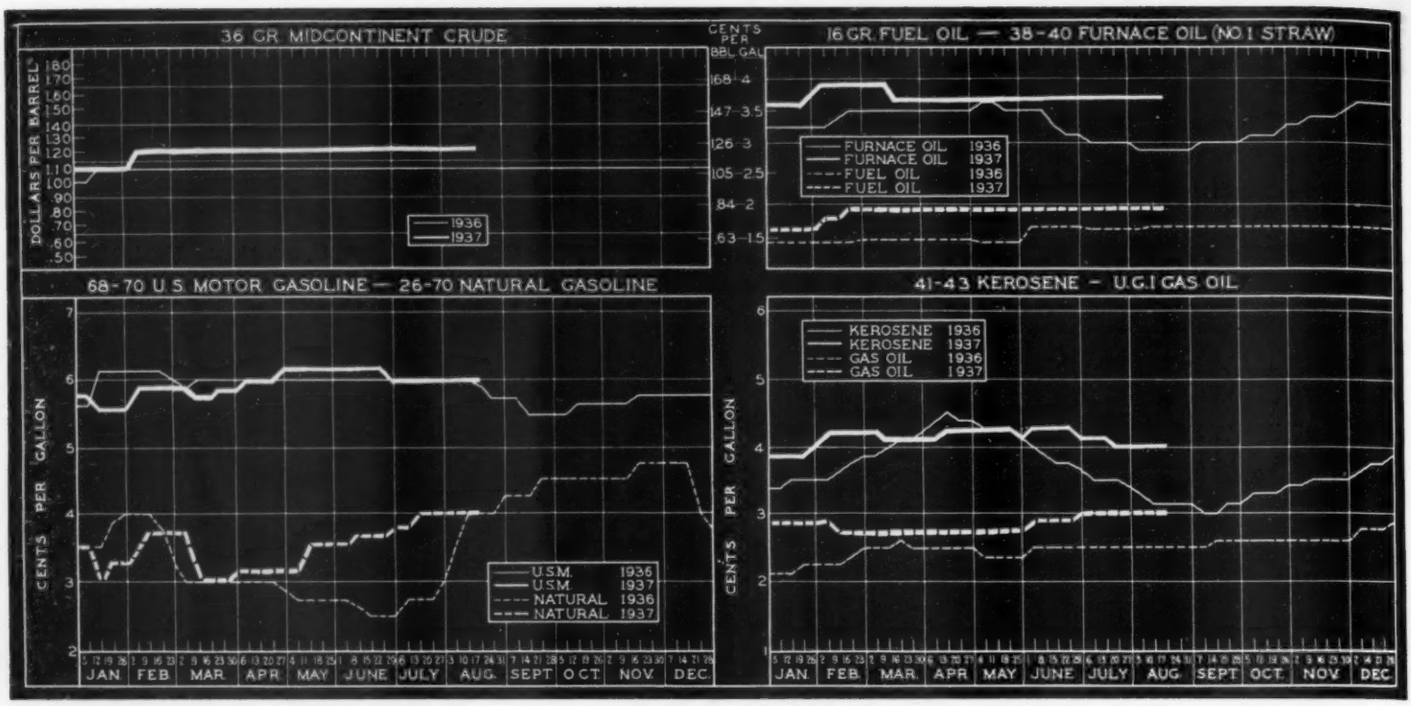
D. O. MORAN, of Oil City, Pa., Venango County oil producer, is spending his vacation in Gilbertsville, N. Y.

E. R. SPENCER, assistant chief engineer of the Texas Pipe Line Company, Tulsa, left this week for the American Society of Mechanical Engineers meeting at State College, Pa. While in the east Mr. Spencer will visit plants manufacturing pipe line equipment.

WILLIAM F. PIELSTICKER has resigned from the legal department of the Skelly Oil Company, Tulsa, effective October 1. He will enter the practice of law in Wichita, Kans., in association with GEORGE B. COLLINS. HAWLEY C. KERR, a member of the Tulsa bar, will join Skelly's legal department September 15.

C. C. BROWN, appointed Oklahoma tax commissioner following the recent death of H. L. McCRACKEN, will continue, according to general expectation, to act as technical adviser to the Oklahoma division of the Interstate Oil Compact Commission, although without pay. Mr. Brown, a former vice president of the old Marland Oil Company, has served as technical adviser to the compact commission since its organization.

PROF. H. C. GEORGE, head of the Department of Petroleum Engineering at the University of Pittsburgh, has resumed his duties after an absence of a year owing to a severe illness from which he has fully recovered. Before joining the University of Pittsburgh faculty, Professor George was director of the School of Petroleum Engineering in the University of Oklahoma and consulting engineer in the U. S. Bureau of Mines. He is the author of "Oil Well Completion and Operation."



Representative Mid-Continent Quotations on Crude Oil and Refined Products, Basis Oklahoma (Group 3)

Inability of Group 3 Refiners to Keep Up With Orders Fails to Lift Prices

By T. F. SMILEY

Any refiner in the Group 3 territory who had gasoline to sell this week didn't find it necessary to raise his voice to sell it. "I'm so far behind in my orders I'm beginning to walk sidewise," declared the sales manager of one large independent company as he hung up the telephone reciever after calling up five other sales managers in a futile effort to pick up a few cars of gasoline with which to mollify restive customers.

Little for the Hopers

No development of the week afforded comfort to that vanishing group of refiners who clung to the hope of higher tankcar prices. Less than a month remains of the peak consuming season for gasoline. To be sure, tankcar prices made two minor advances last year after they had started their fall decline in August. And there is every reason to expect 1937 to witness an even more sturdy prolongation of autumn demand. But last year the gasoline market did not face the dilemma with which it has been confronted since last June, right at the outset of what should be the refiners' harvest, when tank-wagon prices were slashed a half-cent and tankcar prices an eighth.

Mid-Continent nonintegrated refiners generally declare their profits are distincty out of line with the volume of business done, with the urgency of the buying and with the cost of manufacture. Some East Texas refiners assert they are barely breaking even or actually operating at a loss. They say a generous estimate of the returns possible from the high-gravity crude of that area would be 35 per cent third-grade gasoline, 25 per cent middle-octane (cracked), 10 per cent kerosene and allied products, and 20 per cent railroad fuel.

Refined Oil Market Barometer

Increasing vigor is shown by kerosene, tractor fuels and furnace oils, with evidence that quotations will not remain long at their present levels. Gasoline consumption continues at a high rate, but in the interior areas hope for prices more nearly commensurate with demand has been abandoned by most refiners. Uneasiness is expressed over swelling crude supplies.

MID-CONTINENT. Heating oils, kerosene and tractor distillates strong. Gasoline firm.

EAST COAST. Gasoline steady. Fuel oils firm. Lubricants slightly improved.

GULF COAST. Market strong. Prices steady.

CALIFORNIA. Diesel and burning oils firm. Light fuels strong.

PENNSYLVANIA. Kerosene, fuel oil strong. Gasoline firm. Cylinder stocks improved.

CHICAGO. Gasoline steady. Burning oils tightening. Heavy fuels strong.

This 90 per cent utilization of a barrel of East Texas crude would yield at current quotations about $1.63. To the cost of the crude, $1.35, must be added 7½ cents gathering charge and 22½ cents for sales expense, operating costs, taxes, insurance and depreciation, making the raw material cost a total of $1.65. Also a freight differential of one-sixth of a cent must be added if the shipment goes into Group 3 territory. That surely makes it look as though an East Texas refiner who must buy his crude and who produces only third- and middle-grade gasoline is paying 2 cents a barrel for the sheer joy of operating a refinery.

Disappointment over the gasoline price structure in the year of highest demand the industry ever has known is fading a little as the prospect of a profitable season in heating oils brightens. The stream of inquiries has been swelling, and farseeing jobbers with storage facilities are taking advantage of present quotations to fill their tanks. There continues a noticeable disposition on the part of refiners to hold their furnace oils for the better prices believed to be in sight. Quotations were firmer, but unchanged from last week. Particular strength and scarcity were noted in the No. 2 straw, No. 2 dark and No. 3 zero-to-15 grades. Kerosene was firmer, especially the 41-43. A growing number of refiners were refusing to quote under 4⅛ cents on that grade. The 40-42 tractor distillate was in increasing demand. Demand from railroads and from other sources for heavy industrial fuel oil is keeping inventories well cleaned up.

Buying of Natural Grows

Buying of natural gasoline for fall blending assumed substantial proportions in the past week. There was enough of it to prevent any accumulation of unwieldy stocks, though not enough to start withdrawals from field storage. It is pointed out that the quantity of natural stored in the fields this year is far below that of 1936. This is attributed to the heavy export demand, which has kept inventories from getting out of hand. Further cargo buying is reported on its way.

Neutrals and bright stocks continued dull, though some refiners believed they saw faint signs of improvement in the neutrals. Wax was strong.

East Coast Gasoline Inventories Sink and Interest Turns to Crude Stocks

By H. STANLEY NORMAN

NEW YORK, Aug. 17.—The continued drain on motor fuel stocks is now expected to continue through most of September and those concerned with petroleum markets are turning their interest and attention to crude oil inventories. In some quarters, it is felt that crude production restrictions have been permitted to lag too long already while others think that stocks are not yet too burdensome and that reduction of quotas to approximately current demand will be adequate.

Probably part of the interest currently registered in crude oil production and stocks is a natural outgrowth of uneventful developments in the market for products. Hardly without exception, the markets eased through another week unchanged. Movement is satisfactory, prices are reasonably stable and prospects are dim for any material change during the next two or three weeks.

The reduction over the past three weeks in tanker freight rates came too late in the summer season to produce any material reduction in fuel oil prices to dealers. Furthermore, many of the smaller refiners who normally produce more or less distress fuel oil during the summer season have been busy since last March filling contracts of major companies forced into the open market for a part of their 1937-38 winter requirements. The residual fuel oil market on the Gulf Coast has been reported somewhat weaker since August 1, but the small amount of open market dealing has been reported at the unchanged price of 95 cents per barrel. Movement against contracts with large industrial consumers has exceeded anticipations in most instances throughout the summer. Consumption by the shipping industry has been outstandingly in excess of anticipations, according to companies dependent on this trade for a bulk of their fuel oil sales. The only change of importance during the past two weeks in the gasoline market was a reduction of half a cent per gallon on tank-wagon quotations in Boston where competitive conditions probably account for more frequent changes than at any other point along the eastern seaboard.

The fuel oil market throughout the North Atlantic region remains firm and unchanged at previous levels. A part cargo of kerosene sold last week on the Gulf Coast for September-October loading at 5 cents per gallon, gave the first positive information on that market in some time based on actual sale. Refiners on the Gulf Coast have been reported none too anxious to do business in kerosene even at 5 cents per gallon. Numerous export buyers are said to have orders in their files for kerosene at 4⅞ cents per gallon, but the bids are insufficient to bring out the business. Even at 5 cents per gallon, the supply of kerosene available for open market trading on the Gulf Coast is said to be definitely limited. Combined with the part cargo of kerosene sold last week was a quantity of 64-66 375 end-point gasoline which was purchased at 6⅜ cents per gallon, the same price involved in the last three or four cargoes sold on the Gulf Coast for export.

Despite the handicap of season, movement of No. 2 fuel oil has been holding substantially above that registered last summer. The explanation is found in installations of hot water heaters burning light fuel oil in many of the new and reconditioned homes in the Northeast. In New York and vicinity, No. 2 fuel oil is unobtainable at less than 5⅛ cents per gallon in tankcars and the tankwagon price is firmly established at 6.3 cents in most areas. The drives for contract execution among domestic consumers at a price range of 7½ to 8½ cents per gallon for over-the-winter delivery are still occupying attention of most large distributors. There has been no indication so far this summer that last fall's history will be repeated when competitive conditions forced most fuel oil distributors and refiners to extend a voluntary reduction of a half to three-quarters of a cent per gallon below terms of the original contract before any material deliveries had been made against commitments. Very little gas oil and light fuel oil is being offered on the Gulf Coast market for export business, but the few quotations heard range from 4⅛ to 4¼ cents per gallon, unchanged over the past two or three weeks. Fuel oil is also readily absorbed at current quotations in the western Pennsylvania refining district both by open market traders and by contract customers who are beginning to order out material for the early fall demand.

The trend toward lower lubricating oil prices in the Pennsylvania district appeared to have been arrested at the end of last week. The interrefinery buying flurry which brought a temporary halt to skidding lubricating oil prices the week before continued and has been extended sufficiently to end the run for probably several weeks. Jobbers also figured in revival of lubricating oil business, but most were compelled to pay prices substantially in excess of the figures at which the distress business was done with other refiners.

Several large purchases of 600 steam refined cylinder stock were reported last week by bright stock manufacturers. Reports were that purchases were extended over a sufficient period to absorb any additional surplus which might develop during the remainder of the year. Neutral oils are in reasonably sound condition with open market purchases and shipping instructions from contract customers sufficient to keep stocks at convenient levels.

All grades of gasoline, particularly the antiknock material, kerosene and fuel oil are reported in sound condition so far as the Pennsylvania district is concerned. A barge of kerosene was moved from western Pennsylvania by way of Buffalo into the eastern seaboard market last week, but it was made available on the strength of market demand rather than on a price concession. Retail gasoline markets are virtually unchanged. A few cut price signs are still to be found in Brooklyn and in northern New Jersey. However, most of the stations in Pennsylvania are now on an even price basis following provisions of the new law prohibiting discounts. The price basis, however, appears to have been dictated by the marketers of unbranded products at about 2 cents per gallon under what is considered the normal price for this section of the country. Most Pennsylvania stations are now posting 16 cents per gallon for regular grades of gasoline, including state and federal taxes.

Prices in New York and vicinity are unchanged at retail outlets ranging up to 19 cents per gallon in Westchester County for regular branded motor fuel. Service station prices elsewhere are about a cent per gallon less, excepting in parts of northern New Jersey where

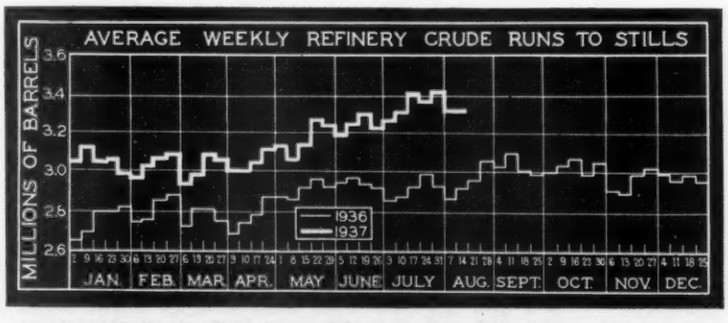
(Continued on Page 136)

A. P. I. Weekly Refinery Statistics

Week Ending August 14, 1937

	Capacity reporting (per cent)	Daily crude runs (bbls.)	Total gasoline stocks	Gas oil and fuel oil stocks
East Coast	100.0	556,000	18,691,000	12,344,000
Appalachian	88.4	108,000	2,664,000	871,000
Indiana, Illinois, Kentucky	92.4	442,000	11,514,000	6,558,000
Oklahoma, Kansas, Missouri	84.7	308,000	6,710,000	3,396,000
Inland Texas	56.6	139,000	1,886,000	1,706,000
Texas Gulf	95.5	728,000	7,817,000	9,369,000
Louisiana Gulf	96.6	132,000	1,609,000	2,484,000
North Louisiana and Arkansas	63.7	34,000	452,000	408,000
Rocky Mountains	69.7	55,000	1,465,000	788,000
California	90.7	536,000	12,549,000	68,770,000
Total reported	88.9	3,038,000	65,357,000	106,694,000
Estimated unreported	.....	302,000	3,730,000	2,950,000
Estimated total*	.....	3,340,000	69,087,000	109,644,000
Estimated total previous week*	.....	3,340,000	69,216,000	108,597,000
August 15, 1936*	.....	2,925,000	61,953,000	110,795,000

*Bureau of Mines, currently estimated.



Stocks of Crude Oil in the United States

(BUREAU OF MINES ESTIMATES)

Week ending July 31, 1937	308,250,000 bbls.
Week ending July 24, 1937	307,551,000 bbls.
Week ending August 1, 1936	306,390,000 bbls.

RETAIL OIL MARKETS

Tank-wagon and filling station prices on gasoline and kerosene furnished by the larger marketing firms

Prices as of August 17, 1937

Taxes

The gasoline quotations given in the following tables include the 1-cent federal tax, as well as state, county and city taxes. The gasoline is the regular or standard grade. In most areas a third grade and a premium grade are also available.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wag. dlr.	Dlr.	Inc. tax	tank-wag.
Chicago, Ill.	15.5	13.5	4.0	10.1
Decatur	15.5	14.0	4.0	10.1
Joliet	15.5	14.0	4.0	10.1
Peoria	15.5	14.0	4.0	10.1
Quincy	15.3	13.8	4.0	9.9
Davenport, Ia.	15.5	14.0	4.0	‡13.1
Des Moines	15.3	13.8	4.0	‡12.9
Mason City	15.7	14.2	4.0	‡13.3
Sioux City	15.5	14.0	4.0	‡13.1
Duluth, Minn.	17.3	15.8	5.0	10.9
Mankato	16.9	15.4	5.0	10.5
Twin Cities	16.9	15.4	5.0	10.5
Lacrosse, Wis.	16.9	15.4	5.0	10.5
Green Bay	17.2	15.7	5.0	10.8
Milwaukee	16.8	15.3	5.0	10.4
Detroit, Mich.	15.4	13.9	4.0	9.8
Grand Rapids	16.5	15.0	4.0	10.9
Saginaw	16.3	14.8	4.0	8.5
Evansville, Ind.	17.0	15.5	5.0	†10.6
Indianapolis	17.2	15.7	5.0	†9.6
South Bend	17.4	15.9	5.0	†9.6
Fargo, N. Dak.	16.9	15.4	4.0	11.5
Minot	18.1	16.6	4.0	12.7
Huron, S. Dak.	17.3	15.8	5.0	10.9
Kans. City, Mo.*	14.9	13.4	4.0	8.0
St. Louis*	15.2	13.7	4.0	9.8
St. Joseph*	14.9	13.4	4.0	7.4
Wichita, Kans.	14.4	12.9	4.0	8.0

*State tax 2 cents, 1-cent city tax and 1-cent federal tax. †Does not include 4-cent state tax. ‡Iowa kerosene prices include 3-cent state tax.

(Exclusive of state general sales taxes, except Indiana and South Dakota.)

Discounts to commercial consumers: On purchases per month off tank-wagon prices: 1,000 gallons or more, 1.5 cents off; minimum delivery 25 gallons.

Stanolex Fuel Oil in Chicago

Effective Dec. 7, 1936, f.o.b. Chicago tank-wagon prices: Range oil, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.3 cents. Stanolex No. 1, 1-99 gallons, 8.8 cents; 100-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex furnace oil, 1-149 gallons, 7.8 cents; 150 gallons and over, 7.0 cents. Stanolex A, 1-399 gallons, 5.75 cents; 400 gallons and over, 4.75 cents. Stanolex B, 1-799 gallons, 5.75 cents; 800 gallons and over, 4.75 cents.

Atlantic Coast District

STANDARD OIL CO. OF NEW JERSEY

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Atl'tic City, N. J.	13.5	12.0	4.0	9.0
Newark	13.5	12.0	4.0	9.0
Annapolis, Md.	15.6	14.1	5.0	9.5
Baltimore	15.0	13.5	5.0	9.0
Cumberland	17.4	14.9	5.0	10.0
Wash'g'n, D. C.*	12.5	11.0	3.0	9.5
Danville, Va.	18.2	15.7	6.0	12.9
Norfolk	17.0	14.5	6.0	11.5
Petersburg	17.3	14.8	6.0	11.7
Richmond	17.3	14.8	6.0	11.7
Roanoke	18.5	16.0	6.0	12.9
Charles'n, W. V.	17.8	15.3	6.0	12.6
Parkersburg	17.1	14.6	6.0	11.2
Wheeling	17.0	15.5	6.0	12.2
Charlotte, N. C.	19.4	16.9	7.0	12.6
Hickory	19.9	17.4	7.0	13.0
Mt. Airy	19.7	17.2	7.0	12.8
Raleigh	19.0	16.5	7.0	12.1
Salisbury	19.5	17.0	7.0	12.7
Charleston, S. C.	18.0	15.5	7.0	11.1
Columbia	19.0	16.5	7.0	12.1
Spartanburg	19.7	17.2	7.0	12.9

*Standard of N. J. has discontinued posting service-station prices at all above points except at Washington and Baltimore where station prices of 16.0 and 18.5 cents, respectively, are in effect.

Price basis to commercial consumers, effective March 8, 1937, in Maryland, District of Columbia, and in Arlington and Fairfax counties in Virginia; and March 12 in New Jersey: To contract accounts purchasing at least one full compartment at time by hose connection, on yearly purchases: From 2,500 to 100,000 gallons, consumer tank-wagon price at time and place of delivery; 100,000 gallons per year, consumer tankcar price plus .5 cent per gallon. Consumer tank-wagon price generally will be equivalent to dealer tank-wagon price less .5 cent per gallon.

Effective May 15, 1937, in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax counties): Commercial consumers taking deliveries of 50 gallons (W. Va., 100 gallons) or more at one time will be billed at posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons (W. Va., 100 gallons) will be billed at 4 cents per gallon over posted consumer tank-wagon price. Generally the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Discount for kerosene, 1 cent off tank-wagon price for 25 gallons or more under contract (contract not necessary in Baltimore) except no discount in New Jersey.

Southern District

STANDARD OIL CO. OF KENTUCKY

	Gasoline			Kero.
	Tank wag.	Net dlr.	Inc. tax	tank-wag.
Atlanta, Ga.	22.0	19.0	7.0	*13.0
Augusta	21.0	18.0	7.0	*14.0
Macon	21.5	18.5	7.0	*14.5
Savannah	19.0	16.0	7.0	*12.6
Birm'ham, Ala.	19.5	16.5	8.0	12.0
Mobile	22.0	19.0	9.0	11.0
Montgomery	22.0	19.0	9.0	14.5
Jackson, Miss.	21.0	18.0	7.0	*13.0
Vicksburg	20.5	17.5	7.0	*13.0
Jacksonville, Fla.	20.5	17.5	8.0	11.0
Miami	20.5	17.5	8.0	†11.5
Pensacola	22.0	19.0	9.0	12.0
Tampa	19.0	16.0	8.0	10.5
Lexington, Ky.	20.0	17.0	6.0	11.0
Covington	19.5	16.5	6.0	11.0
Louisville	20.0	17.0	6.0	10.5
Paducah	20.0	17.0	6.0	8.0

Price basis to tank-wagon consumers: Effective January 4, 1937, 3 cents per gallon below tank-wagon price. Kerosene prices in all states subject to 2 cents discount except in Kentucky where prices are net.

*Includes 1-cent state tax. †Subject to 2-cent discount.

Montgomery, Ala., has a county tax of 1 cent per gallon, and a city tax of 1 cent per gallon on gasoline, in addition to state tax; and 1 cent per gallon on kerosene. Mobile, Ala., has a city gasoline tax of 2 cents per gallon; Birmingham, Ala., has a city gasoline tax of 1 cent per gallon; Pensacola has a city gasoline tax of 1 cent.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Dealer	Inc. tax	tank-wag.
Denver, Colo.	17.5	5.0	11.5
Grand Junction	20.0	5.0	15.0
Pueblo	17.5	5.0	10.5
Casper, Wyo.	18.0	5.0	11.5
Cheyenne	18.0	5.0	13.0
Butte, Mont.	19.5	6.0	15.5
Billings	20.0	6.0	15.5
Helena	21.5	6.0	15.5
Great Falls	21.5	6.0	15.5
Salt Lake, Utah	19.5	5.0	16.0
Twin Falls, Ida.	21.5	6.0	18.0
Boise	21.5	6.0	18.0
Albuquerque, N. M.	17.5	6.5	12.0

Ohio

STANDARD OIL CO. OF OHIO

	Gasoline			Kero.
	Tank wag. con'r.	Di-vided dlr.	Inc. tax	tank-wag.
Ohio points	17.0	16.0	5.0	*13.5

*Includes state tax of 1 cent.

Divided dealer price is also price to authorized agents, exclusive of .5 cent rental. Tank-wagon price is price to commercial consumers in deliveries of 25 gallons or more; less than 25 gallons gets service-station price.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank-wag.
San Francisco	17.5	18.5	4.0	11.5
Los Angeles	17.0	18.0	4.0	9.0
Fresno, Calif.	18.5	19.5	4.0	12.0
Phoenix, Ariz.	21.0	22.0	6.0	‡16.0
Reno, Nev.	20.0	21.0	5.0	13.0
Portland, Ore.	20.0	21.0	6.0	13.5
Seattle, Wash.	20.0	21.0	6.0	13.5
Spokane	23.0	24.0	6.0	16.5
Tacoma	20.0	21.0	6.0	13.5

‡Includes 5-cent state tax.

Discounts to dealers: On gasoline, off tank-wagon price, to 100 per cent dealers, 3 cents; to split dealers, 2 cents. To commercial consumers: on tank-wagon price: on single deliveries of 40 gallons and over, advance quantity discount extended at time of delivery, 3 cents. Service station schedule applies on single deliveries less than 40 gallons. On kerosene in tankcar, transport truck and trailer delivery, 3 cents off tank-wagon price; plant deliveries to jobbers, 2.5 cents below tank-wagon.

New York and New England

SOCONY-VACUUM OIL CO., INC.

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Albany, N. Y.	15.0	13.5	5.0	9.0
*Met. N. Y.:				
Manh't'n, Br'nx	15.0	13.5	5.0	9.0
Staten Island	15.0	13.5	5.0	9.0
Q'ns & Brklyn	15.0	13.5	5.0	9.0
Buffalo	15.8	14.04	5.0	8.5
Rochester	15.3	13.92	5.0	8.5
Syracuse	15.5	14.1	5.0	8.5
Boston, Mass.	12.5	14.0	5.0	8.5
Portland, Me.	15.8	13.5	5.0	8.75
Manch'ter, N. H.	16.3	14.0	5.0	9.5
Burlington, Vt.	15.9	13.9	5.0	9.5

*Does not include 2 per cent city sales tax which is calculated on basis of net retail price exclusive of state and federal taxes.

Price basis to undivided dealer: Posted dealer tank-wagon price less .5 cent. Price basis to commercial consumer: Effective Nov. 15, 1936, monthly purchases of 25,000 gallons and over, consumer tankcar prices at delivery point plus .5 cent per gallon; monthly purchases of 5,000 to 25,000 gallons, undivided dealer price at delivery point; Monthly purchases under 5,000 gallons, pay divided dealer tank-wagon price at delivery point.

Nebraska

STANDARD OIL CO. OF NEBRASKA

	Gasoline			Kero.
	Tank wag.	Dlr.	Inc. tax	tank-wag
Omaha	17.9	16.4	6.0	10.4
McCook	18.0	17.1	6.0	10.0
Norfolk	18.3	16.8	6.0	10.8
North Platte	18.7	17.2	6.0	11.2
Scotts Bluff	19.4	15.9	6.0	11.9

Discounts to commercial consumers for tank-wagon deliveries covered only by standard commercial consumers contract, effective Jan. 1, 1935.

Oklahoma and Arkansas

CONTINENTAL OIL CO.

	Gasoline		Kero.
	Dealer	Inc. tax	tank-wag.
Muskogee, Ok.	15.0	5.0	7.0
Oklahoma City	14.0	5.0	8.0
Tulsa	14.0	5.0	7.0
Ft. Smith, Ark.	15.5	5.0	10.0
Little Rock	18.0	7.5	9.5
Texarkana	15.5	5.0	8.5

Texas

	Gasoline			Kero.
	Tank wag.	Serv. sta.	Inc. tax	tank-wag.
Dallas, Tex.	14.0	18.0	5.0	8.0
Fort Worth	14.0	18.0	5.0	8.0
Houston	14.5	18.5	5.0	8.0
San Antonio	14.5	18.5	5.0	8.0

Central South District

STANDARD OIL CO. OF LOUISIANA

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
N. Orleans, La.	20.5	18.0*	10.0	†13.0
Baton Rouge	18.5	16.0	8.0	12.0
Alexandria	19.0	16.5	8.0	12.0
Lafayette	19.5	17.0	8.0	13.0
Lake Charles	19.5	17.0	8.0	12.5
Shreveport	18.0	15.5	8.0	9.5
Knoxville, Tenn.	21.5	19.0	8.0	14.0
Memphis	19.5	17.0	8.0	12.0
Chattanooga	21.0	18.5	8.0	13.5
Nashville	20.5	18.0	8.0	11.0
Bristol	20.25	19.0	8.0	14.5

*Includes 2-cent parish tax. †Includes 1-cent parish tax and 1-cent state tax.

Standard of La. has transferred all stations to dealers except in New Orleans and Baton Rouge where station prices are 24 and 22 cents per gallon, respectively.

Price basis to commercial consumers: Effective May 15, 1937, deliveries of 50 gallons or more in one delivery takes posted consumer tank-wagon price. Accounts taking deliveries of less than 50 gallons at one time pay posted consumer tank-wagon price plus 4 cents per gallon. Generally, the posted consumer tank-wagon price will be equivalent to the dealer price less .5 cent per gallon.

Louisiana kerosene prices include 1-cent state tax.

Pennsylvania, Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Tank wag. dlr.	Tank car con'r.	Inc. tax	tank-wag.
Philadelphia, Pa.	14.5	13.0	5.0	10.5
Pittsburgh	15.5	13.5	5.0	11.0
Allentown	15.0	13.5	5.0	11.0
Erie	14.5	13.0	5.0	10.0
Scranton	15.0	13.5	5.0	11.0
Altoona	15.5	13.5	5.0	11.0
Dover, Del.	14.5	....	5.0	11.0
Wilmington	14.0	....	5.0	11.0
Springf'ld, Mass.	14.8	....	4.0	9.0
Worcester	14.8	....	4.0	9.0
Hartford, Conn.	14.6	....	4.0	9.0
New Haven	14.0	....	4.0	9.0
Providence, R. I.	14.0	....	4.0	8.5

Price basis to undivided dealers, dealer tank-wagon price less .5 cent per gallon. Price basis to commercial consumers in Pennsylvania and Delaware, effective March 11, 1937: Consumers under contract using 100,000 gallons or more per year full compartment hose deliveries, tankcar plus .5 cent. Consumers under contract using less than 100,000 gallons per year compartment hose deliveries, undivided dealer price. Consumers under contract less than full compartment delivery, consumers not under contract less than full compartment delivery, and consumers not under contract full compartment delivery, divided dealer price. Less than 25 gallons, tank-wagon delivery, 4 cents per gallon above undivided dealer price.

Naphtha

STANDARD OIL CO. (INDIANA)

	Tank-wagon*
Oleum spirits	15.7
V.M.&P. naphtha	16.0
Cleaners' naphtha	15.0
Stanisol	15.0

*Prices include 3-cent Illinois tax, but not 1-cent federal tax or 2 per cent retail occupational tax.

Prices f.o.b Chicago. Each price subject to discount of 1 cent per gallon for 150 gallon lots if covered by contract.

Canada*

3 Star Imperial Gasoline
IMPERIAL OIL, LTD.

	Tank-wag.	Inc. tax	Kero. tank-wag.
Halifax, N.S.	24.0	8.0	18.5
St. John, N.B.	24.0	8.0	18.5
Montreal, Que.	21.0	6.0	17.5
Toronto, Ont.	22.0	6.0	17.0
Hamilton, Ont.	22.0	6.0	17.0
Winnipeg, Man.	28.2	7.0	20.7
Brandon, Man.	29.8	7.0	22.3
Regina, Sask.	29.5	7.0	22.0
Saskatoon, Sask.	32.3	7.0	24.8
Edmonton, Alta.	30.5	7.0	24.2
Calgary, Alta.	28.0	7.0	21.5
Vancouver, B.C.	23.0	7.0	23.0

*Imperial gallon used in Canada.

Divided dealers pay tank-wagon price. Discount to undivided dealers, 1 cent below tank-wagon price. In maritime provinces both divided and undivided dealers pay tank-wagon price.

Retail Price Changes

Standard Oil Co. (Indiana) August 2 advanced tank-wagon kerosene 2.2 cents in Green Bay; August 9 advanced tank-wagon kerosene 2.3 cents in Davenport.

Continental Oil Co. July 27 advanced dealer gasoline 1.5 cents in Pueblo; August 10 reduced tank-wagon kerosene .5 cent in Texarkana.

Standard Oil Co. of Nebraska August 10 reduced dealer gasoline .6 cent and tank-wagon kerosene 1.1 cent in McCook; August 13 reduced dealer gasoline 2 cents in Scottsbluff.

New York Market

(Continued from Page 135)

considerable under the market selling has continued all summer.

Threat of a major conflict between China and Japan remains a potential factor in the petroleum market of the Gulf Coast. Inquiries are said to indicate that China and Japan are both testing the sources of supply to place themselves in position to order promptly, if conditions develop to warrant more than normal stocks.

PRICES OF REFINED PRODUCTS

All quotations f.o.b. plant in cars for interstate or export movement except as otherwise noted

Prices as of August 17, 1937

The following quotations are exclusive of the federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils.

Refinery Gasoline

OKLAHOMA (Group 3)—

U. S. Motor grades:		
62 oct. and below (3d gr.)	.05	.05¼
63-67 octane	.05⅜	.05⅝
68-70 octane (regular)	.06	.06¼
60-62 400 grades:		
62 oct. and below (3d gr.)	.05	.05¼
63-67 octane	.05⅜	.05⅝
68-70 octane (regular)	.06	.06¼
64-66 375	.05½	.05¾
68-70 360	.05¼	.05⅜

NORTH TEXAS—

U. S. Motor grades:		
62 octane and below	.05	.05¼
63-70 octane	.05⅜	.05⅝
68-70 octane (regular)	.06	.06¼
60-62 400	.05	.05¼
64-66 375	.05½	.05¾

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

U. S. Motor grades:		
62 octane and below		.05½
63-67 octane	.05¾	.06
68-70 octane (regular)		.06½

ARKANSAS (Ark., N. La., Miss. del.)—

U. S. Motor grades:		
62 octane and below		.05½
63-67 octane	.06	.06½
68-70 octane (regular)		.06½

CHICAGO (Based on Group 3)—

U. S. Motor grades:		
62 octane and below	.05	.05¼
63-67 octane	.05⅜	.05⅝
68-70 octane (regular)	.06	.06¼
60-62 400 grades:		
62 octane and below	.05	.05¼
63-67 octane	.05⅜	.05⅝
68-70 octane (regular)	.06	.06¼
64-66 375	.05	.05¼
68-70 360	.05⅛	.05⅜

PENNSYLVANIA (inland refineries)—

58-60 U. S. Motor:		
Below 60 octane	.06	.06¼
60-64.9 octane	.07⅜	.07⅝
65-70 octane	.07½	.07¾
64-66 375	.06¼	.06⅝
68-70 350	.06⅜	.06½

CALIFORNIA (domestic movement)—

54-58 U. S. Motor	.07½	.08½
58-60 400, 65 oct. and higher	.08¼	.09½

EAST COAST (domestic)—

U. S. Motor below 60 octane:		
*New York (Bayonne)		.07¼
Baltimore		.07¼
U. S. Motor, 60-64.9 octane:		
*New York (Bayonne)	.07½	.07¾
Philadelphia	.07½	.07¾
Boston		.07¾
Baltimore	.07½	.07¾
Charleston, S. C.		.07¾
U. S. Motor, 65 and above:		
*New York (Bayonne)	.08	.08½
Philadelphia	.07¾	.08¼
Boston	.08	.08½
Baltimore		.08
Charleston, S. C.		.08

*All grades of gasoline one-eighth to one-fourth cent less for barge shipments. New York harbor prices are for New York and New England delivery. Prices for New Jersey delivery one-fourth cent lower.

GULF COAST (domestic)—

U. S. Motor grades:		
Below 60 octane	.06	.06⅛
60-64.9	.06½	.06⅝
65 octane and higher		.06½

Naphtha

PENNSYLVANIA (inland refineries)—

50-52 450 (blending)	.05¾	.06
52-54 450 (blending)	.05¾	.06
54-56 450 (blending)	.05⅞	.06⅛

Natural Gasoline

OKLAHOMA (Group 3)—

Grade 26-70		.04
Grade 18-55	.04¾	.04⅞

NORTH TEXAS—

Grade 26-70		.04⅛
Grade 18-55	.04⅞	.05

CALIFORNIA—

75-85 375-390	.06¾	.07½

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

Grade 26-70	.04	.04⅛

Tractor Fuel

OKLAHOMA (Group 3)—

40-42 gr., 315-325 i.b.p., 110 flash, 540-550 e.p.	.04	.04¼
41-43 gr., 300-350 i.b.p., 110-125 flash, 500-520 e.p.	.04⅜	.04⅝
46-48 gr., 210-230 i.b.p., 480 max. e.p.	.04¾	.04⅞

Kerosene

(All kerosene water white)

OKLAHOMA (Group 3)—

41-43	.04	.04¼
42-44	.04¼	.04½

NORTH TEXAS—

41-43	.04	.04¼

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

41-43		.04⅝

ARKANSAS (Ark., N. La., Miss. del.)—

41-43		.04⅝

PENNSYLVANIA (inland refineries)—

45		.05
46		.05⅛
47		.05¼

CHICAGO (Based on Group 3)—

41-43	.04	.04¼
42-44	.04¼	.04½

CALIFORNIA (Pac. Coast market)—

38-43 high burning test	.04¾	.05¾

NEW YORK (Bayonne, N. J.)—

41-43	.05½	.05¾

***GULF COAST (domestic)—**

41-43	.04⅞	.05

*Barge price one-eighth cent lower.

Furnace Oil

OKLAHOMA (Group 3)—

No. 1 prime white, 38-42	.03⅞	.04
No. 1 straw, 38-40	.03⅝	.03¾
No. 2 straw, 32-36	.03½	.03⅝
No. 2 dark, 32-36	.03¼	.03½
No. 3 zero to 15, 28-32	.03⅛	.03⅜
No. 3, 15 and above, 28-32	.02⅝	.02¾

NORTH TEXAS—

No. 1 prime white, 38-42		.04
No. 1 straw, 38-40	.03⅝	.03¾

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

No. 2, 32-36	.03½	.03⅝

ARKANSAS (Ark., N. La., Miss. del.)—

No. 2, 32-36		.03⅝

CHICAGO (Based on Group 3)—

No. 1 prime white, 38-40	.03⅞	.04
No. 1 straw, 38-40	.03⅝	.03¾
No. 2 straw, 32-36	.03½	.03⅝
No. 2 dark, 32-36	.03¼	.03⅜
No. 3, zero to 15, 28-32	.03⅛	.03¼
No. 3, 15 and above, 28-32	.02⅝	.02¾

NEW YORK (Bayonne, N. J.)—

*No. 1		.05¾
*No. 2	.05¾	.05⅞
*No. 4	.05⅛	.05⅞

*Barge deliveries one-eighth to one-fourth cent under above, tankcar price.

Gas Oil and Fuel Oil

(gas oil per gal.; fuel oil per bbl.)

OKLAHOMA (Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.05	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
Below 18 fuel oil, industrial	.80	.85

NORTH TEXAS—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.05	1.12½
No. 5 low cold test, 18-22	.85	.90
Below 18 fuel oil, industrial	.80	.85

NORTH LOUISIANA (Ark., N. La. and Miss. delivery)—

10-14 fuel oil, industrial	.80	.85

CHICAGO (Based on Group 3)—

U.G.I. gas oil	.03	.03⅛
No. 4, low cold test, 24-28	1.05	1.12½
No. 4, 15 and above, 24-28	.90	.95
No. 5, low cold test, 18-22	.85	.90
No. 6, low cold test, 10-16	.80	.85

PENNSYLVANIA (inland refineries)—

36-40	.04⅜	.04½

CALIFORNIA—

Los Angeles:		
30-34 gas oil, per bbl.	1.20	1.35
24 plus diesel, per bbl.	1.25	1.60
24 plus diesel (bunkers)	1.50	1.65
12-16 (bunkers at tidewater)	1.05	1.20
10-16 (cargo lots)	.95	1.10
12-17 (tankcars)	1.00	1.15
10-17 (high sulfur)	.65	.95
San Joaquin Valley:		
10-18 (tankcars)	.80	1.00
24 plus diesel, per bbl.	1.45	1.65
San Francisco:		
27 plus diesel		1.70
24 plus diesel (bunkers)		1.75
10-16 (bunkers)		1.15

GULF COAST—

28-30 gas oil	.04⅛	.04¼
28-30 diesel (bunkers)		1.90
Bunkers (bulk cargoes)		.95
Bunker C (bunkers)		1.05

NEW YORK (Bayonne N. J.)—

27 plus, gas oil		.04¾
28-30 diesel (lighterage 6¼c per bbl.)		2.20
28-30 diesel (tankcars)		.05
Bunker C (to ocean-going ships in N. Y. harbor)	1.35	1.50
Industrial fuel (tankcars)		.04½

Lighterage charge 5c bbl. additional.

Bright and Steam Refined

OKLAHOMA (Group 3)—

Bright Stocks:		
190-200 D, 15-25		.22
150-160 D, 0-10		.19
150-160 D, 15-25		.18½
150-160 E, 15-25		.18
100-110 D, 0-10		.17
Steam refined:		
631 green (treated)		.16
600 dark green (untreated)		.05

PENNSYLVANIA—

Bright Stocks (Pennsylvania Grade No. 8 color, 145-50 at 210, 545-550 flash):		
10 pour test	.24	.24½
15 pour test	.23	.23½
20 pour test	.22	.22½
25 pour test	.21	.21½
Steam refined:		
600	.14	.14½
650	.16½	.17
600 Pennsylvania flash	.17½	.18
630 flash	.21½	.22
600 Warren E filtered	.17½	.18

Neutral Oil

(Vis. at 100° F. except Pennsylvania and color N.G.A.)

OKLAHOMA (Group 3)—

Zero to 10 Cold Test:		
150-3		.09
180-3		.10
180-4		.09½
200-3		.10½
200-4		.10
250-3		.11½
250-4		.11
280-3		.12½
280-4		.12
300-3½		.13
400-3½		.14
100-2½ paraffin oil		.06
15-20 Cold Test:		
200-3		.10
200-4		.09½
250-3		.11
250-4		.10½
280-3		.12
280-4		.11½

GULF COAST—

Pale Oils:		
200-3	.07	.07¼
300-3	.07½	.07¾
500-3½	.08½	.08¾
750-3½	.08⅝	.09¼
1,200-3½	.09½	.09¾
1,500-4	.09¾	.10
Red Oils:		
200-5-6	.07¼	.07½
300-5-6	.07¼	.07½
500-5-6	.08	.08½
750	.08¾	.09
1,200-5-6	.09¼	.09½

CALIFORNIA (moving to dom. market)—

Pale Oils:		
100-2½-3	.07	.08
200-2½-3	.07	.08
300-2½-3	.07	.08
400-3-4	.09	.11
540-3-4	.09	.11
550-3-4	.09	.11
600-3-4	.09	.11
Red Oils:		
200-4-5	.07	.08
300-5-6	.07	.08
350-5-6	.10½	.11½
400-5-6	.10½	.11½
450-5-6	.10½	.11½
500-5-6	.10½	.11½
600-5-6½	.10½	.11½
700-6½ plus	.10½	.11½
750-6½ plus	.10½	.11½
900-6½ plus	.10½	.11½

PENNSYLVANIA—

150 vis. at 750° F. color, 400-405 flash:		
Zero pour test	.22½	.23
10 pour test	.21½	.22
15 pour test	.21	.21½
20 pour test	.20	.20½
180 vis. at 70° F., 3 color:		
25 pour test	.23	.23½
200 vis. at 70° F., 3 color:		
Zero pour test	.27	.27½
10 pour test	.26	.26½
15 pour test	.25½	.26
25 pour test	.24½	.25

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—

124-126 (a.m.p.) w.c. scale		.03

PENNSYLVANIA (inland refineries)—

122-124 (a.m.p.) w.c. scale	.0295	.0300
124-126 (a.m.p.) w.c. scale	.0300	.0305

NEW YORK—

Wax in bags fully refined:		
122-125 (a.m.p.) wax		.0445
125-127 (a.m.p.) wax		.0455
128-130 (a.m.p.) wax		.0480
130-132 (a.m.p.) wax		.0505
133-135 (a.m.p.) wax		.0535
135-137 (a.m.p.) wax		.0560
124-126 (a.m.p.) w.s.	.0295	.0300
124-126 (a.m.p.) y.s.	.0265	.0280
Petrolatum in barrels, carload lots:		
Dark green		.01⅞
Amber	.02⅞	.03
Extra amber	.03	.03⅛
Lily white	.06⅝	.06¾
Snow white	.07¾	.07⅞
Cream	.05⅝	.05¾

Export Prices

GASOLINE

GULF COAST—

U. S. Motor		.06
60-62 400	.06	.06⅛
61-63 390	.06⅛	.06¼
64-66 375		.06⅜

LOS ANGELES—

U. S. Motor grades:		
53-55 octane		.04¾
55-65 octane	.04¾	.05
65-67 octane		.05
67-69 octane		.05¼
Above 69 octane	.05½	.06

KEROSENE

GULF COAST—

41-43 prime white	.04⅞	.05
41-43 water white		.04⅞
44 water white	.05	.05⅛

LOS ANGELES—

41-43 water white	.04½	.05

LUBRICANTS

(Pennsylvania Grade)

NEW YORK (f.o.s. in bbls.)—

Cylinder Stocks:		
600 Warren E	.26½	.27
600 S.R. unfiltered	.24	.24½
630 S.R. unfiltered	.25½	.26
600 flash, S.R.	.26½	.27
630 flash, S.R.	.31½	.32
Bright Stocks:		
8 color	.32	.32½
6½ plus color in dilution	.31½	.32

NEUTRAL OIL

200-3 color	.34	.34½
150-3 color	.29½	.30

PARAFFIN WAX

NEW YORK (prices per pound)—

123-126 a.m.p.		.04125
125-127 a.m.p.		.0425
128-130 a.m.p.		.0450
133-135 a.m.p.		.0525
135-137 a.m.p.		.0550
Crude scale:		
124-126 w.s.	.0295	.0300
124-126 y.s.	.0265	.0280

CRUDE OIL PRICES

Oklahoma, Kansas, North Central and East Central Texas

(January 28, 1937)

East Texas (May 22, 1937)*	$1.35
Van, Tex.†	1.10
Camp Hill, Tex.	1.27
Cass County, Tex.‡	1.25
Talco	.73
Altus and Tipton, Okla.§	1.20
Other fields (see gravity table).	

*All companies. †Humble Oil & Refining Co.; Pure Oil Co. ‡Texas Co. §Gulf Oil Co. Talco by Humble Oil & Refining Co.

West Texas

See gravity table.

Pecos County*	.91
Pecos shallow†	.81

*Shell Petroleum Corp., Gulf Pipe Line Co., and Humble Oil & Refining Co. †Shell Petroleum Corp.

Gulf Coast

(January 28, 1937)

Choctaw and Darrow, La. See note below	
Clay Creek, Tex.	$1.00
Garden Island, La.	1.37
Cleveland, Tex.	1.27
Hardin, Tex.	1.15
Lafitte, La.	1.24
Livingston, Tex.	1.27
Heyser, light (Nov. 1, 1936)	1.15
Heyser, heavy (Nov. 1, 1936)	.90
Placedo (Nov. 1, 1936)	.90
Welsh, La.	.98
Tepetate (La.) (Jan. 4, 1937)	1.12

Greta, Refugio, O'Connor, McFadden, Saxet, Segno, Taft, Tomoconnor and Plymouth take same gravity prices as Gulf Coast. Duval, Jim Hogg, Webb and Zapata counties, Texas, and Heyser and Placedo fields take Mirando gravity prices. Jennings, La., 5 cents lower than Gulf Coast prices on each degree. Segno, Texas, takes Gulf Refining Co.'s Gulf Coast prices. Choctaw and Darrow, Louisiana, posted for first time by Standard Oil Co. of Louisiana, start below 21 degrees at 90 cents, with 3-cent differential up to 25 gravity, then 2-cent differential up to 40 and above, $1.36.

Rocky Mountain States

(Effective January 28, 1937)

Iles, Colo., light*	$1.18
Iles, Colo., heavy*	1.12
Greybull, Wyo.*	1.30
Torchlight, Wyo.*	1.30
Grass Creek, Wyo., light.*†	1.30
Grass Creek, Wyo., heavy (Nov. 4, 1936)*†	.62
Hamilton Dome, Wyo. (Nov. 4, 1936)*	.57
Elk Basin, Wyo., light*†	1.30
Frannie, Wyo., heavy*	.62
Frannie, Wyo., light	.82
Hogback, N. Mex.*	1.33
Pondera, Mont. (Jan. 26, 1936)*	1.05
Salt Creek, Dutton Creek and Midway, Wyo., take Stanolind's Oklahoma prices on a gravity basis.	
Big Muddy, Wyo.†	1.23
Rock Creek, Wyo.†	1.20½
Lea County, N. M. (see West Texas gravity table).	
Artesia, N. Mex.	.90
Maljamar, N. Mex.	.90
Canon City and Florence, Colo.	1.10
Florence, Colo.	.98
Lance Creek, Wyo.	.97
Sunburst, Mont. (June 5, 1936)	1.20
Cat Creek, Mont.	1.40
Cut Bank, Mont.	1.35

*Stanolind Oil & Gas Co. †Ohio Oil Co. ‡Continental Oil Co. Cut Bank by Toronto Pipe Line Co.

Middle Western States

OHIO OIL CO.
(Effective January 28, 1937)

Lima	$1.25
Illinois	1.35
Princeton, Ind.	1.35
Midland, Mich. (July 23, 1937)*	1.27
West Branch, Mich. (July 22, 1937)	1.09
Buckeye (July 23, 1937)	1.24½
Arenac, Mich. (July 1, 1937)	1.21
Muskegon, Mich.	1.00
Eastern Kentucky:	
Big Sandy River	.42
Kentucky River	1.50
Western Kentucky	1.40

*Posted by Pure Oil Co.

Midland, Mich., price posted by Simrall Corp. and Pure Oil Co. includes Greendale, Porter, Beaverton, Crystal and equal grades. West Branch and Arenac by Simrall Corp. Eastern Kentucky crude purchased by Ashland Refining Co., Ashland, Ky. Buckeye posted by Simrall Corp. and Pure Oil Co.

Southwest Texas

(January 28, 1937)

Pettus	1.37
Salt Flat, Darst Creek, Hilbig, Carroll Clark, Zoboroski	1.09
Luling	1.00
Lytton Springs	1.12

Saxet and Taft take same gravity table as Gulf Coast.

North Louisiana and Arkansas

Smackover, all grades	$ .90
Tullos and Urania	1.02
El Dorado East field	.90
Union County, Ark.	.90
Ouachita County, Ark.	.90

Eastern States

TIDE WATER PIPE LINE CO.
(Effective June 7, 1937)

Bradford, Pa.	$2.82
Allegany, N. Y.	2.82

SOUTH PENN OIL CO.
(Effective June 7, 1937)

Pennsylvania Grade Oil in National Transit Lines (Bradford field)	2.82
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	2.57
Pennsylvania Grade Oil in Eureka Pipe Line lines	2.52
Pennsylvania Grade Oil in Buckeye Pipe Line lines	2.37
Corning Grade Oil in Buckeye Pipe Line Co.'s lines (Jan. 29, 1937)	1.42

PENNZOIL CO.
(Effective June 7, 1937)

Pennsylvania Grade Oil in National Transit Lines:	
Group A — Includes Cochran, Franklin, Hamilton and Doolittle districts.	2.82
Group B — Includes Tidioute district.	2.81
Group C — Includes Turkey and Tidioute districts.	2.80
Group D — Includes Bear Creek and Porkey districts.	2.79
Group E — Includes Eldenau, Bull Creek, Rough Run, Carbon, Dipner, Bredlin, McJunkin, Jameson, Kenerdell, Emlenton, Tiona, Lacey and Kinzua districts	2.76

Price depends on lengths of pipe line haul to plant at Oil City.

PURE OIL CO.
(Effective June 7, 1937)

Cabin Creek, W. Va.	2.52
Bradford Hollow, W. Va.	2.52
Kelly Creek, W. Va.	2.52

Canada

Ontario (Sept. 9, 1933)*	
Petrolia	$2.10
Oil Springs	2.17
Turner Valley, Alberta province (Dec. 16, 1936):†	
Clear naphtha	$2.60
Discolored naphtha, 65 gravity and higher	2.30
Discolored naphtha and crude oil, 40-40.9 gravity	1.55
Increasing 3 cents for each degree of gravity with top price for 64-64.9 gravity	2.27

These prices delivered field tankage.
*Imperial Oil, Ltd.
†Imperial Oil, Ltd., and Regal Oil & Refining Co. On crude oil alone British American Oil Co. posted above prices on December 9, 1936.

Mexico

Panuco*	$1.24

*In U. S. currency, f.o.b. ship, based on April spot market transactions.

Rocky Mountain Runs

Estimated daily average production in week ending August 14:

	Bbls.
WYOMING	
Salt Creek	15,930
Big Muddy	1,390
Dallas-Derby	570
Elk Basin	600
Frannie	950
Garland	2,080
Grass Creek	2,930
Hamilton dome	1,050
LaBarge	890
Lance Creek	9,570
Lost Soldier	1,560
Medicine Bow	3,040
Oregon Basin	4,450
Osage	830
Qealy dome	840
Rock River	1,410
Miscellaneous	2,580
Total Wyoming	50,670
MONTANA	
Border	90
Cat Creek	620
Cut Bank	10,600
Dry Creek	440
Kevin Sunburst	5,070
Lake Basin	20
Pondera	1,560
Total Montana	18,400
COLORADO	
Florence	170
Ft. Collins and Wellington	290
Iles dome	3,120
Moffat	410
Orchard	50
Rangely	80
Tow Creek	190
Price	1,140
Total Colorado	5,450
NEW MEXICO	
Cooper	6,370
Eaves	1,170
Eunice	31,860
Hardy	1,410
Hobbs	19,860
Jal	1,270
Langlie	2,000
Lynch	800
Lynn	330
Mattix	1,720
Monument	33,180
North Lynch	60
Penrose	3,010
Rhodes	70
Skelly	1,500
South Eunice	1,810
Vacuum	10
Artesia-Maljamar	6,320
Getty	200
Hogback	200
Rattlesnake	710
Table Mesa	100
Total New Mexico	113,960
Total Region	188,480

Crude Prices by Gravities

	1 Oklahoma-Kansas	2 Oklahoma-Kansas	3 North and Central Texas	4 East Central Texas (Mexia district)	5 North Louisiana-Arkansas	6 Gray County, Texas	7 Hutchinson-Carson counties, Texas	8 Rodessa, Louisiana-Texas and Panola County, Texas	9 Conroe, Tomball, Raccoon Bend, Deep, Satsuma	10 Gulf Coast	11 Gulf Coast	12 Lea County, N. Mex. West Texas except Pecos County,	13 Mirando district, Texas	14 Marion County, Texas	15 Refugio, Greta, Saxet, Taft, Texas	16 Anahuac, Flour Bluff, Dickson, Turtle Bay	17 White Castle, Louisiana	18 Iowa, Louisiana	19 Cayuga, Texas
Bel. 18	....	....	....	....	....	....	....	....	....	$.90	....	....	....	....	....	....	....	$.90	....
18-18.9	....	....	....	....	....	....	....	....	....	.92	....	....	....	....	....	....	....	.92	....
19-19.9	....	....	....	....	....	....	....	....	....	.94	....	....	....	....	....	....	$.94	.94	....
20-20.9	....	....	....	....	....	....	....	....	....	.96	$.95	....	$.96	....	$1.01	....	.96	.96	....
21-21.9	....	....	....	....	....	....	....	....	....	.98	.98	....	.98	....	1.03	....	.98	.98	....
22-22.9	....	....	....	....	....	....	....	....	....	1.01	1.01	....	1.00	....	1.05	....	1.01	1.01	....
23-23.9	....	....	....	....	....	....	....	....	....	1.04	1.04	....	1.02	....	1.07	....	1.04	1.04	....
24-24.9	....	....	....	....	....	....	....	....	....	1.07	1.07	....	1.04	....	1.09	....	1.07	1.07	....
Bel. 25	....	$.98	....	....	$.90	....	....	$.93	....	....	....	....	....	$.90	....	....	....	....	$.88
25-25.9	....	1.00	....	....	.92	....	....	.95	....	1.10	1.10	$.78	1.06	.92	1.11	....	1.10	1.10	.90
26-26.9	....	1.02	....	....	.94	....	....	.97	....	1.13	1.13	.80	1.08	.94	1.13	....	1.13	1.13	.92
27-27.9	....	1.04	....	....	.96	....	....	.99	....	1.15	1.15	.82	1.10	.96	1.15	....	1.15	1.15	.94
28-28.9	....	1.06	....	....	.98	....	....	1.01	....	1.17	1.17	.84	1.12	.98	1.17	....	1.17	1.17	.96
Bel. 29	$1.06	....	$.96	$1.03	....	....	....	....	$1.20	....	....	....	....	....	....	....	....	....	....
29-29.9	1.08	1.08	.98	1.05	1.00	....	....	1.03	1.22	1.19	1.19	.86	1.14	1.00	1.19	....	1.19	1.19	.98
30-30.9	1.10	1.10	1.00	1.07	1.02	....	....	1.05	1.24	1.21	1.21	.88	1.16	1.02	1.21	$1.16	1.21	1.21	1.00
31-31.9	1.12	1.12	1.02	1.09	1.04	....	....	1.07	1.26	1.23	1.23	.90	1.18	1.04	1.23	1.18	1.23	1.23	1.02
32-32.9	1.14	1.14	1.04	1.11	1.06	....	....	1.09	1.28	1.25	1.25	.92	1.20	1.06	1.25	1.20	1.25	1.25	1.04
33-33.9	1.16	1.16	1.06	1.13	1.08	....	....	1.11	1.30	1.27	1.27	.94	1.22	1.08	1.27	1.22	1.27	1.27	1.06
34-34.9	1.18	1.18	1.08	1.15	1.10	....	....	1.13	1.32	1.29	1.29	.96	1.24	1.10	1.29	1.24	1.29	1.29	1.08
Bel. 35	....	....	....	....	....	$.96	$.91	....	....	....	....	....	....	....	....	....	....	....	....
35-35.9	1.20	1.20	1.10	1.17	1.12	.98	.93	1.15	1.34	....	1.31	.98	1.26	1.12	1.31	1.26	1.29	1.29	....
36-36.9	1.22	1.22	1.12	1.19	1.14	1.00	.95	1.17	1.36	....	1.33	1.00	1.28	1.14	1.33	1.28	1.29	1.29	....
37-37.9	1.24	1.24	1.14	1.21	1.16	1.02	.97	1.19	1.38	....	1.35	1.02	1.30	1.16	1.35	1.30	1.29	1.29	....
38-38.9	1.26	1.26	1.16	1.23	1.18	1.04	.99	1.21	1.40	....	1.37	1.04	1.32	1.18	1.37	1.32	1.29	1.29	....
39-39.9	1.28	1.28	1.18	1.25	1.20	1.06	1.01	1.23	1.42	....	1.39	1.06	1.34	1.20	1.39	1.34	1.29	1.29	....
40,over	1.30	1.30	1.20	1.27	1.22	1.08	1.03	1.25	1.44	....	1.41	1.08	1.36	1.22	1.41	1.36	1.29	1.29	....

Column 1—Companies posting are Barnsdall, Bell, Champlin, Continental, Cushing, Derby, Dickey, Eason, El Dorado, Empire, Falcon, Globe, Gulf, Johnson, Kanotex, National, Phillips, White Eagle, Stanolind, Sunray, Texas, Sun, Vickers and Wilcox.
Column 2—Anderson & Prichard, Carter, Cosco, Deep Rock, Magnolia, Mid-Continent, Pure, Rock Island, Shell, Sinclair, Skelly and Tide Water.
Column 3—All purchasers.
Column 4—Humble Oil & Refining Co. and Sinclair Oil Purchasing Co.
Columns 5, 6, 7 and 8—All purchasers.
Column 9—Humble Oil & Refining Co. and Sun Oil Co. Tide Water Oil Co.'s schedule starts at 35 degrees, $1.34 with 2-cent spread up to 40 and over at $1.44. (Raccoon Bend prices are for deep sand oil.)
Column 10—The Texas Co. (Gulf Refining Co. pays same prices up to and including 34 gravity, but continues its 2-cent spread up to 40 and over at $1.41.)
Column 11—Humble Oil & Refining Co., Sinclair Prairie Oil Marketing Co., Sun Oil Co.
Column 12—All purchasers.
Column 13—All purchasers (effective July 6, 1937).
Column 14—Magnolia Petroleum Co.
Column 15—Humble Oil & Refining Co. (effective July 6, 1937).
Column 16—Humble Oil & Refining Co. prices start at 30-30.9 gravity at $1.16 adding 2 cents for each degree upward to and including 40 and over at $1.36.
Columns 17 and 18—Shell Petroleum Corp.
Column 19—Tide Water Oil Co.

Canadian Fields

(Continued from Page 114)

potential open flow of around 2,000,000 feet a day.

In the Dover field, Kent County, E. P. Rowe No. 3, Bruette farm, River Road, Raleigh Township, with a flow of 1,500,000 feet a day from the Trenton limestone, is waiting for treatment. Central Pipe Line Co. No. 5, Eli Jubenville farm, Dover West Township, which got the Trenton around 2,925 feet, is below 3,100 feet with a small gas flow. Union Gas Co. No. 13, Dover West Township, brought in some years ago as a large producer from the Upper Trenton, is being deepened.

MARKET RECORD, ACTIVE OIL STOCKS

Compiled by Carl H. Pforzheimer & Co., 25 Broad Street, New York City, Member New York Stock Exchange and New York Curb Exchange

New York Stock Exchange

1937 High	1937 Low	Week ending Aug. 14 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
114⅞	80	1,200	96	94	94	Amerada Corp.	788,675	N.P.	50cQ	7-31-37	$2.00	125½	75	80	48½
37	27¼	8,100	30¼	28⅝	30	Atlantic Refining	2,664,000	$25	25cQ	9-15-37	1.25	35⅛	26⅝	28	20½
43⅜	27⅝	3,100	31⅜	30⅜	31⅜	Barber Co.	387,149	$10	25c.	6-1-37	.50	38½	21	22½	11¾
35¼	23½	12,100	25⅜	24¼	25⅜	Barnsdall Oil Co.	2,247,974	$5	25cQ	8-2-37	.80	28¼	14⅛	14¾	5⅞
20⅞	10	21,700	14¼	13⅛	13⅞	Columbia Gas & Elec.	11,610,036	N.P.	20c	11-16-36	.40	23⅜	14	15¾	3⅜
17⅞	14½	23,800	16	15⅝	15⅞	Consolidated Oil Corp.	13,919,417	N.P.	20cQ	8-14-37	.80	17¼	11½	12¼	6½
49	39¾	8,100	48¼	47	47	Continental Oil of Delaware	4,682,615	$5	50cQ†	9-30-37	1.50	44⅞	28⅛	35	15⅛
17⅝	12½	32,600	16¼	15¼	15⅝	Houston Oil (new)	1,098,618	$25	....	10-17-30	....	13⅞	6⅜	7	1½
35⅝	25⅛	10,600	33	31¼	32¾	Mid-Continent Petroleum	1,855,912	$10	50cSA	6-15-37	1.15	30⅞	17¼	20½	9½
34	23⅞	15,600	29¼	26⅞	29	Mission Corporation	1,399,345	N.P.	....	....	.45	29⅞	16¾	17⅜	10⅜
41⅜	31¾	30,200	41	34⅝	35⅝	National Supply of Delaware	382,591	$25	....	5-15-31	....	75½	19⅞	20⅞	9
22⅞	17⅛	15,500	20½	19½	20	Ohio Oil Co.	6,563,377	N.P.	50cSA	6-15-37	.60	18	12⅛	14¼	9¼
29¾	20¾	1,000	26½	25¾	25¾	Pacific Western Oil	1,000,000	N.P.	65c	12-18-36	.65	23½	11¾	14	6¾
4½	2	1,300	2¼	2	2¼	Panhandle P. & R.	198,770	N.P.	....	....	....	4¼	1⅜	1⅞	½
64	49½	15,700	62⅜	61	62¼	Phillips Petroleum	4,449,052	N.P.	75cQ†	6-1-37	2.50	52⅜	38⅛	40	13¾
29⅞	24¼	3,000	26½	25½	26½	Plymouth Oil Co.	1,050,000	$5	35cQ†	3-31-37	.90	27¾	11⅞	13	6½
24⅜	16⅝	51,600	21⅜	20¼	21¼	Pure Oil Co.	3,281,120	N.P.	....	9-1-30	....	24⅞	16	17	5⅞
54⅛	36⅝	3,900	40¾	40	40¼	Seaboard Oil of Delaware	1,224,283	N.P.	25cQ	9-15-37	1.00	44	30½	36⅞	20¾
34¾	25⅝	21,900	28	26½	26½	Shell Union Oil	13,070,625	N.P.	50c	7-15-37	.25	28¼	14¾	16½	5½
105⅝	102	1,200	104¾	104¼	104½	Shell Union Oil 5½% pfd.	343,500	$100	26⅛c	12-15-36	28.87½	127½	102	111	63⅛
4¼	3⅛	500	3¼	3⅛	3¼	Simms Petroleum	461,698	$10	50c liq.	8-3-37	2.25 liq.	6¾	3½	18¾	4¾
60⅝	42	3,100	59	57⅞	57⅞	Skelly Oil	1,006,348	$15	50c	9-30-37	....	47⅜	19½	20½	6½
23¼	16¼	105,100	23¼	22	23⅛	Socony-Vacuum	31,151,071	$15	25cSA	7-15-37	.70	17½	12½	15¾	10⅝
50	39⅝	17,900	46⅜	44½	45½	Standard Oil of California	13,014,754	N.P.	45cQ†	9-15-37	1.20	47⅝	35	41⅛	27¾
50	40½	12,100	47¼	45¼	46⅝	Standard Oil (Indiana)	15,196,241	$25	50cQ†	9-15-37	2.40	48½	32¾	33⅜	23
36½	30⅝	400	34½	34	34½	Standard Oil of Kansas	134,841	$10	$1	12-26-36	1.00	31	25	32	20
76	63⅛	22,000	70	67½	70	Standard Oil of New Jersey	25,856,081	$25	$1.25SA†	6-15-37	2.00	70⅜	51⅛	52⅜	35¾
77½	65	500	71	68	71	Sun Oil	2,156,825	N.P.	25cQ	9-15-37	$1 & 6% Sk.	91	70	77	60½
65⅛	50⅜	20,500	65	63¾	64⅞	Texas Corp.	10,896,858	$25	50cQ	7-1-37	1.50	55¼	28⅞	30¼	16½
9⅝	6	5,600	7⅜	7⅛	7⅜	Texas Gulf Producing Co.	888,129	N.P.	5c	12-15-36	.05	8⅞	4⅜	4⅜	2½
16⅝	11¾	5,200	14⅛	13½	13⅝	Texas Pacific Coal & Oil	888,237	$10	10c	6-1-37	.25	15¼	7½	9¼	3¼
21⅝	15⅜	17,500	21⅜	20¾	20⅞	Tide Water Associated	6,288,512	N.P.	35cQ†	9-1-37	.70	21¾	14¾	15⅞	7⅝
28¼	22⅞	2,900	25¾	25⅛	25¼	Union Oil of California	4,386,070	$25	30cQ	8-10-37	1.00	28½	20¾	24	14¾
31½	24¾	500	27	27	27	Union Tank Car Co.	1,200,000	N.P.	40cQ	9-1-37	1.20	31⅝	22⅝	26½	20⅞
6¼	4¼	1,800	4⅝	4⅜	4½	Wilcox Oil & Gas	424,839	$5	...	5-10-28	....	5¼	2¾	3⅛	1

*Ex-dividend. †Includes extras.

New York Curb Exchange

1937 High	1937 Low	Week ending Aug. 14 Sales	High	Low	Close	Stocks—	Total shares outstanding	Par value	Latest dividend	Payable or last paid	Dividends paid in 1936	1936 High	1936 Low	1935 High	1935 Low
21⅜	16	2,200	18	17	18	Bridgeport Machine Co.	260,000	N.P.	$1	12-21-36	$1.00	21	13¼	14⅛	3¾
51½	45¾	600	50	49	49	Buckeye Pipe Line Co.	200,000	$50	$1Q	9-15-37	3.25	50	39¾	42½	30½
2¾	1⅝	1,200	1¾	1⅝	1¾	Carib Syndicate	799,020	25c	....	....	....	4⅞	1⅞	4¼	1⅝
123	110¼	100	116	116	116	Chesebrough Mfg. Co.	120,090	$25	$1.50Q†	6-28-37	7.00	124¾	105	157	115
5⅜	2⅝	22,100	3⅛	3	3⅛	Cities Service	37,804,394	N.P.	....	6-1-32	....	7⅜	3	3¼	⅝
5½	4⅛	1,500	4¾	4¼	4⅝	Cosden Petroleum	399,687	$1	....	....	....	4½	1½	1½	¼
38¾	28½	2,900	38¾	36	38⅜	Creole Petroleum	6,974,356	$5	50cSA†	6-10-37	.50	39	19⅞	23¾	10
18⅝	11½	800	12⅜	12	12	Darby Petroleum	351,390	$5	25cSA	7-15-37	.50	18⅛	9	8⅞	4
8¾	5¼	2,300	8	7¾	7¾	Derby Oil & Refining	263,162	N.P.	....	....	....	6¾	1⅞	2	¾
38	28½	No sales ..	..	..	..	Eureka Pipe Line	50,000	$50	$1Q	8-2-37	4.00	47½	38½	38	33¼
63½	50	11,700	60	57	60	Gulf Oil Corp.	9,076,202	$25	25cQ	7-1-37	1.50, 100% Stk.	59	36	74¾	50¼
87	72	5,000	84⅜	83⅛	84⅜	Humble Oil & Refining	8,923,935	N.P.	37½cQ	7-1-37	1.50	80	57	64	44
24¼	20	4,800	20⅞	20½	20¾	Imperial Oil of Canada	26,919,871	N.P.	62½cSA†‡	6-1-37	1.25	24½	19¾	22½	15⅝
15	7¾	200	9¾	9¼	9¾	Indiana Pipe Line	300,000	$10	30cSA	5-15-37	.80	9¾	5½	6⅛	3⅝
39½	33½	4,200	35⅜	34⅞	35	International Petroleum	14,247,088	N.P.	$1.25†‡	6-1-37	2.50	39⅝	32⅝	39¾	28
15¼	11⅜	4,800	13⅜	13	13	Louisiana Land & Exp.	3,000,000	N.P.	10cQ	3-15-37	.50	15⅜	9⅞	11⅜	4⅜
34	16⅛	3,600	29½	28⅛	28⅞	Lion Oil Refining	270,000	N.P.	50cQ†	7-20-37	.75	17¾	7⅜	8⅛	3½
14¼	9⅞	800	10⅞	10⅝	10⅝	Lone Star Gas	5,382,723	N.P.	20c	4-20-37	.60	14¼	9⅞	10⅞	4½
14⅝	9½	1,200	9¾	9½	9½	Midwest Oil Co.	998,444	$10	50c	6-15-37	....	..	..	..	..
7⅞	5¾	2,100	6⅜	6	6⅜	Mountain Producers	1,682,182	$10	30cSA	6-15-37	.60	8⅜	5	5¾	4⅛
19½	14½	2,300	15½	15	15⅛	National Fuel Gas	3,810,183	N.P.	25cQ	7-15-37	1.00	23	17⅜	20	11¾
12½	10	1,000	10½	10¼	10½	National Transit	509,000	$12.50	45cSA	6-15-37	.75	15¾	9¼	10⅝	6¾
6⅛	4¾	No sales ..	..	..	..	New Bradford Oil	1,445,202	$5	15cSA	4-15-37	.10	4⅝	2⅞	3¼	2
5	2¼	500	2½	2½	2½	New Mexico and Arizona	1,000,000	$1	1c	12-1-36	.01	6⅝	1⅝	2½	1
5⅜	4½	200	4¼	4¼	4¼	New York Transit	100,000	$5	15cSA	10-15-36	.35	6¼	4¼	4⅞	3
12¾	7½	300	8¾	8⅜	8⅜	Northern Pipe Line	120,000	$10	40c	6-1-37	.40	9¾	4⅞	8	5¼
9⅝	5½	17,300	8¼	7½	8¼	Pantepec Oil	1,608,700	N.P.	....	....	....	10⅛	3¼	4⅜	1¼
13¾	5	1,300	6¾	6⅛	6⅜	Root Petroleum Co.	336,045	$1	25c	11-2-36	.50	19¼	4½	5	1½
6½	4	700	5⅞	5¾	5¾	Ryan Consolidated	296,931	N.P.	....	....	....	4¾	1⅞	2½	⅝
53	42	3,400	53	46	52½	South Penn Oil	1,000,000	$25	75cQ†	6-30-37	2.60	44	32½	34½	21⅝
7¼	5	100	5¾	5¾	5¾	Southern Pipe Line	100,000	$10	25cSA	9-1-37	.25	7⅞	3¼	5	3⅞
42	27	No sales ..	..	..	..	South West Penna. Pipe Lines	35,000	$50	50cQ	4-1-37	13.00	60	44	56	44¼
20¾	19	1,400	20½	20¼	20½	Standard Oil of Kentucky	2,604,790	$10	40cQ†	6-15-37	1.35	23⅜	17⅛	24	18
13¾	9⅞	200	10⅛	10	10⅛	Standard Oil of Nebraska	188,403	$25	25c	3-29-37	.25	14⅝	11	12	7¾
45	33	1,200	39	36	39	Standard Oil of Ohio	753,740	$25	25cQ	9-15-37	2.00	40	21¾	23⅝	11½
4⅞	3¾	5,200	4⅝	4½	4⅝	Sunray Oil	1,910,119	$1	10c	8-20-37	.10	5	2⅝	2⅞	⅞
7⅝	5	300	5⅝	5½	5½	Texon Oil & Land	336,028	$2	15cQ	6-30-37	.60	9¾	5⅜	6⅞	5

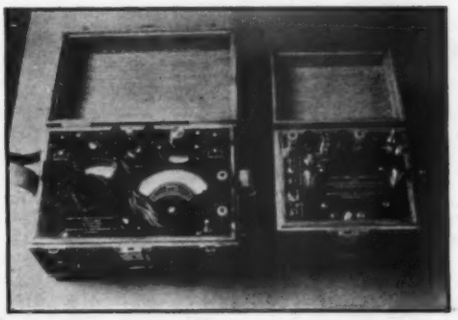
*Ex-dividend. †Includes extras. ‡Payable in Canadian funds.

Note—In comparing highs and lows for the several years in the two tables, it will be necessary to take into consideration cases where there have been stock split-ups.

NEW OR IMPROVED EQUIPMENT

Device Is Made for Prospecting by Electrical Resistivity

Electrical resistivity methods in oil and mineral prospecting have engaged the interest of geophysicists, and the apparatus pictured here, manufactured by the Geophysical Instrument Co., Washington, D. C., is intended for such work by the Gish-Rooney technique. A current is sent from batteries through a pair of metal stakes set in the ground some distance apart. The potential drop is measured between a pair of intermediate stakes. From the two values, read on the indicating instruments shown, the value of the earth resistivity can be determined. By noting the change in resistivity values with different stake spacings, inferences can be drawn concerning underground structures favorable for the accumulation of oil.



The hand-operated commutator serves to reverse the current to the stakes periodically, and thus averages out earth currents, strays, and polarization potentials. The "current" and "potential" circuits of the apparatus have been carefully shielded throughout, experience having shown that leakage between circuits may be a source of serious error. The two units shown weigh a total of 28 pounds. Besides these, batteries, cable and groundstakes are needed for field work.

Bulletins, Booklets and Other Literature for the Trade

Latest information on construction of pipe lines by electric welding for transportation of oil, gas and water is contained in a bulletin published by the Lincoln Electric Co., Cleveland, Ohio. The new bulletin, "Building Better Pipe Lines Faster at Less Cost by Shielded-Arc Welding," contains 14 pages and is profusely illustrated.

Of interest to executives, engineers and operating men is broadside N-33, a concise discussion of methods and instrument types through which are realized the full possibilities of modern temperature measurement and control. Copies may be had from the Leeds & Northrup Co., 4934 Stenton Avenue, Philadelphia, Pa.

Complete data on Dart pipe unions and fittings are given in the new catalog published by the E. M. Dart Manufacturing Co., Providence, R. I. Information on types, sizes and prices is included with color illustrations showing the distinctive, full-bearing, true ball-joint construction.

"Stabilog Process Control in Industry," a 32-page booklet published by the Foxboro Co., Foxboro, Mass., describes a unique system of automatic control of temperature, pressure, level and flow in continuous processes, which takes into consideration the rate of change of the condition being controlled.

Bulletin No. 10, announced by the Engineering Co., 305 East Third Street, Tulsa, provides 20 pages of information about Teco sucker-rod shock-absorbers.

A new miniature packing catalog, featuring the 11 most commonly used United States packings, has been announced by the mechanical goods division of United States Rubber Products, Inc. The 11 illustrated in this booklet were chosen because they meet a large percentage of normal packing requirements.

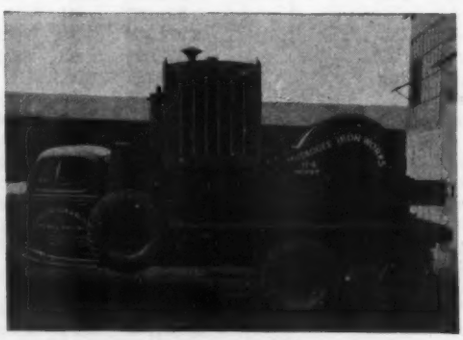
A pocket-size booklet showing measuring tapes and rules of only such patterns as are used by engineers, surveyors, road-builders and the oil industry is offered by the Lufkin Rule Co., Saginaw, Mich. It contains a page devoted to tension and temperature standards, standardization, etc.

An eight-page illustrated folder, No. 1772, has been completed by Link-Belt Co., Philadelphia, Pa., featuring vibrating screens for reconditioning, degassing and cleaning rotary drilling-mud.

Fairbanks-Morse steam pumps are described in bulletin 6205 obtainable from Fairbanks, Morse & Co., 900 South Wabash Avenue, Chicago. They have been designed to pump water, oil and similar liquids at pressures up to 420 pounds per square inch in quantities up to 464 gallons per minute.

Servicing and Drilling Hoist Is Put on Market by Muskogee

The Muskogee Iron Works, Muskogee, Okla., announces development of a large well-servicing and drilling unit designated as the model H-4 hoist.

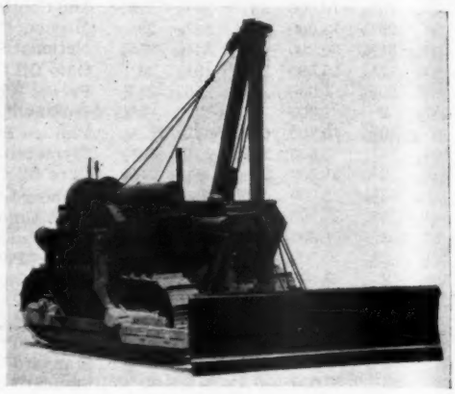


The hoist shown in the illustration is equipped with a Hercules HXE engine, Brown-Lipe 7440 transmission and high-speed reverse. Spudding attachment, A frame, auxiliary drum or cathead shaft and rotary drive sprocket can be added to convert the well-servicing hoist into a cable-tool or rotary unit.

This unit has, theoretically, a capacity of 9,000 feet of seven-eighths inch line and 17,000 feet of five-eighths inch line. The single line speeds and single line pulls range from 27,615 pounds at 132 feet per minute in low to 5,717 pounds at 641 feet per minute in high for an engine speed of 1,600 r.p.m. The hoist is equipped with a gas-regulator. large gas-tank, oilbath gas-scrubber, gasoline tank for easy starting and other Muskogee features.

New Angle Blade Is Available for Trackson Pipe-Layers

A new angle blade is announced by the Trackson Co., Milwaukee, Wis., as available for Trackson pipe-layers mounted on "Caterpillar" tractors



"Thirty" and RD4. The combination units are especially useful on reconditioning and repair work, as well as on short line construction, building gathering lines and laying short loops or laterals. Angle-filling the trench is designed to insure a uniformly compact fill due to the tamping action of the tractor tread, thus reducing liability to line damage from undercuts and washouts. The angle blade is easily adjustable for buildozing dirt straight ahead or at an angle of 30 degrees to either side, cutting a path with ample overlap beyond the outside edges of the tracks. Raising and lowering of the blade is controlled by a single lever, and a safety throwout prevents damage from overrun in raising. When not in use, the blade may be secured in the raised position or the complete assembly easily removed.

New Building for Chain Belt

The Chain Belt Co. of Milwaukee, Wis., has completed erection of a new building at its West Milwaukee works to house the machine shop and the West Milwaukee offices. All machine operations except the assembly and manufacture of steel and malleable chains and the finishing of sprocket wheels are being moved from the Milwaukee works to the West Milwaukee plant. More manufacturing space is made available for the production of conveyor and drive chains and sprockets. Other machine operations will now be closer to the construction equipment plant and the conveyor plant, the principal departments served.

Visiting Oklahoma City

C. J. Coberly, president of Kobe, Inc., Los Angeles, is on one of his many business trips to Oklahoma City, since the opening of the company's branch at 3119 South Robinson Avenue in that city. He will spend about two weeks making a tour of inspection of the Kobe hydraulic pumps installed in that district, and taking care of other business matters concerning the Oklahoma City branch in cooperation with C. M. Rader, branch manager.

Many Advantages Combined in Elliott Wire-Line Core-Drill

The Elliott wire-line core-drill and drilling assembly, introduced by the Elliott Core Drilling Co., 4731 East Fifty-second Drive, Los Angeles, Calif., is distinguished by three features designed to cut faster hole and recover an increased percentage of clean, true core with minimum of operating difficulty and expense: (1) The novel valve, which creates a suction on the inner barrel to aid the entry of unconsolidated cores; (2) the improved cutter-heads, which discharge the circulation closer to the bottom of the hole while protecting the core from circulation wash, resulting in faster drilling and much more hole before becoming dull; (3) the inner barrel, which requires no driving mechanism and embodies no moving parts, thereby assuring simplicity and fewer operating difficulties.

This equipment has been perfected and proved by usage in Elliott's coring service to oil companies before being offered for sale. It has been subjected to severe performance tests from grass roots to depths of more than 9,000 feet, and in all types of formations. The percentage of core recovery has been exceptionally good. The better placed circulation keeps the reamer-blades and bottom-hole cool and clean, flushing the cuttings off bottom and reducing to minimum any regrinding of formations. Cutter-heads are left in the hole until definitely dull, assuring maximum service from each.

Among advantages of the Elliott wire-line method of coring are the savings effected through elimination of many round trips of the drillpipe. This minimizes wear on the drillpipe, tool-joints, drilling-lines, brakes and drawworks. Protective mud coatings on the walls of the hole are maintained in better condition. The method permits coring a specific footage of hole in less overall time, with increased savings in time at greater depths; and drilling straighter and faster hole with a higher factor of safety, due to the use of a drill-collar as an outer barrel.

Merchandising Plan Extended

The "labeled service" merchandising plan, which provides a simplified method of obtaining the correct style and size of oil well drilling packings, has been extended by United States Rubber Products, Inc. The data now include sizes and names of boiler feed and other small pumps and drilling engines.

Here and There With Men Who Manufacture Equipment

E. S. Crosby has been named president of the Johns-Manville International Corp., a subsidiary of the Johns-Manville Corp. Mr. Crosby joined Johns-Manville in 1928, when it absorbed the Celite Co. of which he was vice president and a director.

Emsco Asbestos Co., Downey, Calif., has appointed the Harrisburg Engineering Co., Fort Worth, Tex., sole distributor of Emsco oil-field products in Texas, Louisiana, New Mexico, Kansas, Oklahoma and Arkansas.

Appointment of W. H. Scherer as manager of the Worthington Pump & Machinery Corp.'s plant in Holyoke, Mass., is announced. Mr. Scherer had been general superintendent of the Westinghouse Electric & Manufacturing Co.'s East Springfield works for 18 years.

Marvin Marsh, special sales representative for the American Rolling Mill Co., Middletown, Ohio, in the Kansas City, Mo., territory since January 1, 1935, has been named manager of the company's new district office at 7100 Roberts Street, that city.

Louie F. Lamb, factory representative for the Axelson Manufacturing Co., was injured in an automobile accident, near Randlett, Okla., while on his way from Oklahoma City to Wichita Falls, Tex. He is recovering in Bethania Hospital, Wichita Falls.

Williams Introduces Two Lines of Heavy-Pattern Wrenches

Designed for severe service, the new heavy-pattern hex-box wrenches, announced by J. H. Williams & Co., 75 Spring Street, New York, provide

extra strength and full bearing. The heads are approximately the same thickness as the nuts they serve. Their comparatively thin head walls are particularly efficient in close quarters. Openings range from 1¼ to 3⅛ inches. The wrenches are offered in two drop forged lines, carbon steel and chrome-molybdenum "Superrenches."

Carbon steel wrenches are finished in black enamel (baked on) with bright heads. "Superrenches" are chrome-plated with the faces of heads buffed bright.

Oilbath Rotary of New Design Is Put on Market by Ideco

The International Derrick & Equipment Co. offers to the oil industry a new 27½-inch oilbath rotary which incorporates modern design and several outstanding features. The rotary base and all heavily stressed castings are of chrome-nickel alloy steel. The rotary is equipped with a low, perfectly flat table which is completely encircled by a heavy cast-steel guard having a nonskid surface. The main bearing races are hardened by a special process to over 600 Brinell.

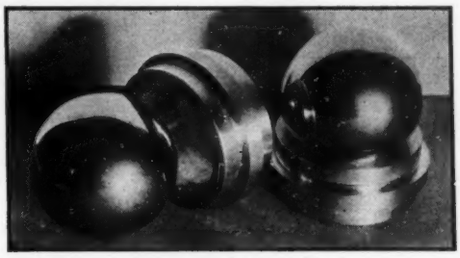
The pinion-shaft is mounted in two self-aligning S.K.F. combination radial and thrust bearings, which allow a universal movement of the pinion shaft. The pinion-shaft drive sprocket is of chrome-nickel heat-treated steel with machine-cut teeth.

The lubrication is fully enclosed oilbath. The bearings and gears are sealed to insure against

contamination of the lubricant by mud or other foreign substances. Any matter which might get into the oil is carried to a deep oil-sump and filtered out. The pinion-shaft bearings are enclosed in a "capsule" entirely separate from the housing of the table bearing, and each of these has its own separate oil reservoir. This rotary has a deadload capacity of 300 tons, which allows it to handle the maximum depth of present-day drilling.

Life of Ball Valves Is Prolonged by Wear-Resistant Alloys

Materials of construction play an important part in the service given by ball valves for preventing the reverse flow of oil in pumping wells. A recent development is the use of wear- and corrosion-



resistant nonferrous alloys for these parts. Valve-balls are ground from castings of Hastelloy D, an acid-resistant nickel-silicon-copper-aluminum alloy, while the seat-rings are hard-faced with Haynes Stellite, a wear-resistant alloy.

These alloy valve-balls and hard-faced seats are reported to have proved especially suitable for handling high-sulfur crudes, which are corrosive and, in the case of sand-carrying oils, abrasive as well. A saving is said to be effected through the use of valves having these alloy parts because they remain long in service and thus reduce the expense and loss of time occasioned by replacements.

Colmonoy No. 6 Shell Protects Against Corrosion and Wear

The illustration shows a processed plunger, 7 inches in diameter and 41½ inches long, which will go in service on a Wilson-Snyder reciprocating hot-oil pump at the Humble Oil & Refining Co.'s refinery in Baytown, Tex. This plunger consists of a mild-steel body protected against the ravages of acid corrosion and wear throughout 34 inches of its length by a centrifugally cast shell of Colmonoy No. 6.

The purported advantages of this type of fabrication are its economy and the fact that the centrifugally cast protective shell is free of defects and is of the same density throughout its entire length. Colmonoy No. 6 is a recently developed chromium boride alloy of nickel, which has a high resistance to sulfuric and hydrochloric acid corrosion and wears smooth in service.

Shooting Oil Well Fire

Plans for a demonstration of shooting out a gas fire at the Oil-World Exposition, to be held in Houston, Tex., October 11 to 16, inclusive, are being made. It is planned to make the demonstration highly instructive and by portraying the hazards of well fires, bring home to operators the vital necessity for use of all safety equipment in drilling operations. The work of extinguishing the fire will be under the supervision of M. M. Kinley, who will consult with the exposition management to simulate field conditions as closely as possible. High-pressure gas will be piped to the site selected and wooden derricks placed in readiness for erection before demonstrations. The shooting will be done with gelatin in the manner used by Mr. Kinley in extinguishing well fires all over the world.

CLASSIFIED ADVERTISING

Patent Attorneys

JACK A. SCHLEY
PATENT LAWYER

Patents Obtained — infringement practice in all Courts—oil field experience. 1807-11 Tower Petroleum Bldg., Dallas. 2014 Second Nat'l. Bank Bldg., Houston. 707 Insurance Building, San Antonio. 433 Munsey Building, Washington, D. C. Address any of these offices.

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Before disclosing your invention to any one, send for blank form:
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Instructions "How to Establish Your Rights" and complete information FREE!
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Ranches and Farm Lands

560 ACRES growing timber lands. Mineral oil and gas rights. Timber will grow profit on investment. Abstract title. D. Cooper, Hamilton, Ala.

Situations Wanted

Petroleum Engineer and Geologist, desires a connection with a reliable oil company; has over twelve years of experience and can furnish the best of references. Address Box H-873, The Oil and Gas Journal, Tulsa, Oklahoma.

PRODUCTION Superintendent—Age 40. 17 years' experience. Can take charge of your development work and operate your properties economically. Address Box H-894, The Oil and Gas Journal, Tulsa, Oklahoma.

CHEMIST-CHEM. ENGR. 10 years' experience major oil company refinery development and operation, particularly new lube processes. Interested in directing developments or operation. Address Box H-893, The Oil and Gas Journal, Tulsa, Oklahoma.

GAS ENGINEER—Executive, 18 years experience in design, construction, operation and management of natural gas transmission and distribution systems, inventories, appraisals, valuations and acquisition of natural gas properties and companies, engineering reports on new and proposed gas projects, contacts with municipal administrations and State and Federal regulatory bodies—Public Relations. Have qualified as an expert on pipe line construction in rate hearings. Seeks connection with progressive independent or major company. Address Box H-910, The Oil and Gas Journal, Tulsa, Okla.

LAND MAN and graduate engineer, over 12 years experience in field work and as department head with major company. Now have responsible position with major but want place in land dept, of progressive independent. Best references furnished. Address Box H-914, The Oil and Gas Journal, Tulsa, Okla.

TRAFFIC Manager, age 39, fifteen years experience. Competent organize office. Prefer locate West. Address Box H-922, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST and Engineer having Field Dept. established in Stamford, Texas, for several years, wishes an eastern financial connection for the development of wildcat properties and proven and semiproven royalties and other worthy oil investments, in Jones, Throckmorton and Young counties. References will be furnished successful brokers, agents and operating company. Address reply to P. O. Box 547, Stamford, Texas.

METALLURGIST seeks connection with corporation having or desiring to organize metallurgical dept. Now employed in a large oil refinery. Mature, reliable and aggressive; technically trained, unusually qualified by experience in foundries, steel mills and other metallurgical plants. Can direct material and metal testing, standardization and specification. Address Box H-920, The Oil and Gas Journal, Tulsa, Okla.

Help Wanted

WANTED—Experienced, competent and responsible rotary tool pusher; preferably man pushing tools for a drilling contractor. "Has Beens" or ambitious drillers need not apply as must have man already engaged in pushing tools. Steady work and good salary assured. Applications should be mailed to Box H-850, The Oil and Gas Journal, Tulsa, Oklahoma.

OPPORTUNITY, experienced in the oil field to assist me in marketing of a proved patented bit, also core barrel. Communicate with H. L. KLESS, 2115 Terry Street, Houston, Texas.

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Our Up-to-Date Lease and Fee Ownership Maps of Counties and Combination Development Maps Save Time and Money.
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WEST PERMIAN BASIN MAP showing latest drilling wells, dry holes, oil fields outlined in red, sections, surveys, blocks, towns, etc. Includes Cochran, West Glasscock, North part Pecos and Winkler counties. 26 x 46 inches. Price $2.00. COUNTY MAPS showing LATEST lease and fee ownership. POOL MAPS. Catalog on request.
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Technical Writer

TECHNICAL papers, booklets, etc., written or revised by experienced oil chemist
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DELAWARE CHARTERS: Complete service $35. Submitted forms. Chas. G. Guyer, Inc., Wilmington, Delaware.

Business Opportunities

CAPITAL WANTED
Seven hundred fifty thousand dollars will acquire control Texas Oil property making profit Hundred Thousand monthly. Going concern. Unusual proposition. Address Box H-897, The Oil and Gas Journal, Tulsa, Okla.

WANTED contractor with rotary to rotate 40" holes, 300' deep each, through clay, hard pan, sand and gravel, or may purchase portable equipment capable of same. Give complete description and price. Address Box H-923, The Oil and Gas Journal, Tulsa, Okla.

Oil Industry Printing

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

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BARGAIN
40 acres FEE LAND including all oil royalty, adjoins seismograph structure of Sinclair Prairie. Nearby leases held by Magnolia, Mid-Continent, Gulf and other major companies. Write or wire.
G. E. FISHER
Key Building, Oklahoma City, Okla.

ROYALTY to offer in LEA COUNTY, NEW MEXICO, and YOAKUM COUNTY, TEXAS. J. W. Wallrich, Lovington, N. M.

109 NEW oil fields and sands discovered in South Texas last 18 months. Royalties, leases or fee lands, close in or in trend carefully selected. Drilling blocks on structure. 20 years this area. M. E. BOGLE, Box 40, San Antonio, Texas.

TEN ACRES Wilcox sand producing royalty under 160 acre lease FOR SALE BY OWNER; additional probable locations. Box H-925, The Oil and Gas Journal, Tulsa, Okla.

25 ACRES of royalty for sale in proven territory in Hughes County. For information call EARL GRISSOM, 3-7119 or write Box 169, Oklahoma City, Okla.

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F. A. SANSOME
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WANTED—Deeded Land-Owners Non-Producing Royalties under lease to major company. Quote lowest cash price. CALIFORNIA LAND & INVESTMENT CO., 741½ So. Alvarado St., Los Angeles, Calif.

PERMIAN BASIN Royalties, fee lands, and leases, bought and sold. L. Wesley Read, Bush Building, Lubbock, Texas.

NEW MEXICO Oil and Gas Leases and royalties. Send 50 cents in stamps for new State Oil Map of New Mexico. Roy G. Barton, Clovis, New Mexico.

$125 will buy you 5 acres FEE LAND including oil royalty. Surrounding acreage leased for oil by major companies.
G. E. FISHER
Key Building, Oklahoma City, Okla.

Crude Oil Production

DO YOU seek an outlet FOR CRUDE OIL? Will build loading racks or lay pipe lines if necessary. North Texas or Coastal crudes preferred. Cargo Oil Exports, Ltd., Chrysler Bldg., New York City.

Detective Agencies

INVESTIGATIONS by trained operative. Law school graduate. Oil corporation work a specialty. So. Texas Investigation Service, 121 West Houston St., San Antonio, Texas.

Financing

CAPITAL raised for development of Oil and Mining properties. Delaware Charters. J. B. Murrow, 299 Broadway, New York.

Equipment Wanted

WANT TO RENT complete drilling rig equipped with three boilers one hundred twenty-five H.P. Hartford approved, also eight-inch drawworks and eighteen or twenty-inch mud pumps and sixty-two hundred feet four-inch drill pipe with option to purchase all after drilling first well on our Terry lease Rodessa extension area South Miller County, Arkansas. Also want purchase extra battery three boilers immediately. LAYTON OIL COMPANY, INC., Texarkana, Ark.

CLASSIFIED DISPLAY RATES

Classified Display is set with a border and may be used in one or two column sizes.

1 Inch	1 time	$5.00
1 Inch	13 times	4.50 per inch
1 Inch	26 times	4.00 per inch
1 Inch	52 times	3.50 per inch

This space may be contracted for over a period of one year from the date of the first insertion and is PAYABLE IN ADVANCE, MONTHLY.

CLASSIFIED

Classified advertising rates: First insertion, 35 cents a line; each additional insertion, 25 cents a line, PAYABLE IN ADVANCE. Six words usually make a line. Count as a word each one-letter word and each group of figures. White-space computed at regular line rate. Allow two extra lines for blind ads. Ads of less than three lines not accepted. No formal acknowledgement is made, and proofs cannot be shown in advance of publication.

	1 time	2 times	3 times	4 times
3 Lines	$1.05	$1.80	$2.55	$3.30
4 Lines	1.40	2.40	3.40	4.40
5 Lines	1.75	3.00	4.25	5.50
6 Lines	2.10	3.60	5.10	6.60
7 Lines	$2.45	$4.20	$5.95	$7.70
8 Lines	2.80	4.80	6.80	8.80
9 Lines	3.15	5.40	7.65	9.90
10 Lines	3.50	6.00	8.50	11.00

We reserve the right to withhold all advertising of questionable character. To avoid delay be sure to send remittance with copy. We will set your ad in the smallest amount of space possible and refund all overpayments. One-time insertions will not be run until fully paid. Forms close MONDAY NOON before each issue date.

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Tulsa, Oklahoma